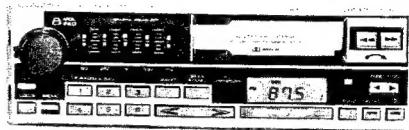


PIONEER

Service Manual

**CIRCUIT & MECHANISM
DESCRIPTIONS**



**ORDER NO.
CRT-398-0**

The photo shows the model KEH-9300 SDK/WG.

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRIC TUNER

KEH-9300SDK ^{WG}

KEH-9300 ^{EW}

CASSETTE CAR STEREO WITH FM/AM ELECTRIC TUNER

KEH-9000 ^{ES}

- For the repair and adjustments, please refer to the service manual (CRT-387).
- 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

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1. SPECIFICATIONS

General (KEH-9300SDK)

| | |
|--------------------------|--|
| Power source | DC14.4V (10.8 ~ 15.6V allowable) |
| Grounding system | Negative type |
| Max. current consumption | 5A |
| Dimensions (chassis) | 180(W)×50(H)×160(D) mm (front face) 184(W)×56(H)×16(D) mm |
| Weight | 2.1 kg |

General (KEH-9300, 9000)

| | |
|--------------------------|--|
| Power source | DC 14.4V (10.8 ~ 15.6V allowable) |
| Grounding system | Negative type |
| Max. current consumption | 5A |
| Dimensions (chassis) | 180(W)×50(H)×150(D) mm (front face) 184(W)×56(H)×16(D) mm |
| Weight | 2 kg |

Amplifier

| | |
|-------------------------|---------------------------------|
| Maximum power output | |
| (2 speaker) | 20W + 20W |
| (4 speaker) | 6.5W + 6.5W |
| Continuous power output | |
| (2 speaker) | 13W + 13W (1% dist. at 1 kHz) |
| (4 speaker) | 4.5W + 4.5W (1% dist. at 1 kHz) |

Load impedance

| | |
|-------------|-----------------------|
| (2 speaker) | 4Ω (4 ~ 8Ω allowable) |
| (4 speaker) | 4Ω (2 ~ 8Ω allowable) |

Graphic equalizer

| | |
|-----------------------------|--------|
| (60, 250, 1k, 3.5k, 10 kHz) | ±10 dB |
|-----------------------------|--------|

Tape player

| | |
|--------------------------|---|
| Tape | Compact cassette tape (C-30 ~ C-90) |
| Tape speed | 4.76 cm/sec. (+ 0.14 cm/sec., -0.05 cm/sec.) |
| Fast forward/rewind time | Approx. 100 sec. for C-60 |
| Wow & flutter | 0.13% (WRMS) |

Frequency response Metal: 50 ~ 16,000 Hz (±3 dB)
Normal: 50 ~ 12,000 Hz (±3 dB)

Stereo separation 45 dB
Signal-to-noise ratio . . . Dolby NR IN: 60 dB (IEC-A network)
Dolby NR OUT: 52 dB (IEC-A network)

FM tuner (KEH-9300SDK)

| | |
|----------------------------|---------------------------------|
| Frequency range | 87.5 ~ 108 MHz |
| Usable sensitivity | 13.2 dBf (1.8 μV/150Ω, mono) |
| 50 dB quieting sensitivity | 18.2 dBf (3 μV/150Ω, mono) |
| Signal-to-noise ratio | 70 dB (IEC-A network) |
| Distortion | 0.3% (at 65 dBf, 1 kHz, stereo) |
| Frequency response | 50 ~ 12,000 Hz (±3 dB) |
| Stereo separation | 40 dB (at 65 dBf, 1 kHz) |

FM tuner (KEH-9300, 9000)

| | |
|----------------------------|---------------------------------|
| Frequency range | 87.5 ~ 108 MHz |
| Usable sensitivity | 12 dBf (1.1 μV/75Ω, mono) |
| 50 dB quieting sensitivity | 17 dBf (1.9 μV/75Ω, mono) |
| Signal-to-noise ratio | 70 dB (IEC-A network) |
| Distortion | 0.3% (at 65 dBf, 1 kHz, stereo) |
| Frequency response | 50 ~ 12,000 Hz (±3 dB) |
| Stereo separation | 40 dB (at 65 dBf, 1 kHz) |

MW tuner (AM tuner)

| | |
|--------------------|----------------------------|
| Frequency range | 531 ~ 1,602 kHz |
| Usable sensitivity | 18 μV (25 dB) (S/N: 20 dB) |
| Selectivity | 30 dB (±9 kHz) |

LW tuner (KEH-9300SDK, 9300)

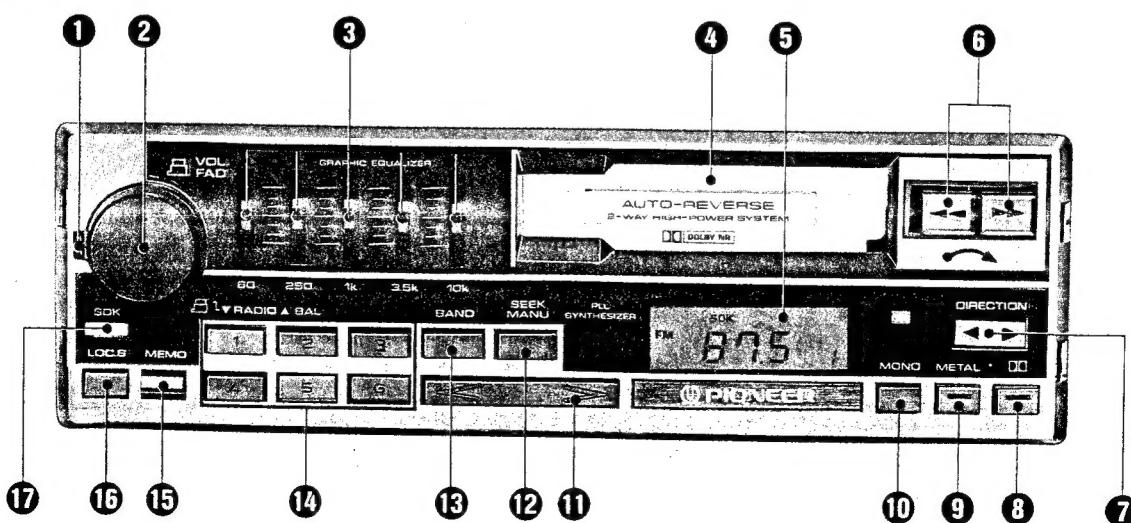
| | |
|--------------------|----------------------------|
| Frequency range | 153 ~ 281 kHz |
| Usable sensitivity | 30 μV (30 dB) (S/N: 20 dB) |
| Selectivity | 30 dB (±9 kHz) |

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

2. OPERATION

• KEH-9300SDK



To Listen to a Tape

1. Insert the cassette tape into the Cassette Insertion Slot ① until it is locked in position with the exposed piece of tape on the right. (The unit will automatically switch to the tape mode when a cassette is inserted while the radio is on.) (Fig. 1)
2. Adjust Volume ②, Balance ③, and Fader ① Controls. Pull out the Balance Control Knob ② and rotate to adjust balance.
3. Depress the Direction Change Button ⑦ to switch over from the side of the tape you are listening to now to the other side during play.
4. To fast forward the tape, depress the Fast Forward/Rewind Button ⑥ pointing in the same direction as the Direction Indicator until it locks into position. To rewind the tape, depress the Fast Forward/Rewind Button pointing in the opposite direction to the Direction Indicator until it locks into position. To release the fast forward or rewind mode, simply depress the other button lightly. (Fig. 2)
- To change from fast forward to rewind or vice versa, depress the other button directly until it locks and this will change the traveling direction of the tape. When the tape has been fully wound up in the fast forward mode, the fast forward mode is released and play begins automatically from the first program on the other side of the tape. When the tape has been fully wound up in the rewind mode, the rewind mode is released and play begins automatically from the first program on the side you have been listening to.
5. To stop tape play or replace the cassette, fully depress both Fast Forward/Rewind Buttons ⑥ at the same time. (Fig. 3)

Note:

Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.

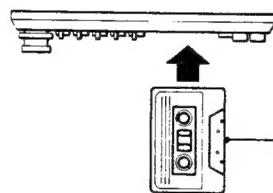


Fig. 1

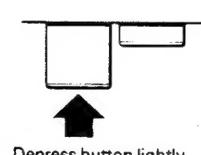
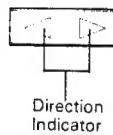


Fig. 2

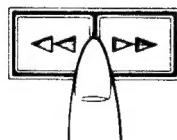


Fig. 3

Fader Control ①

Adjusts front-to-rear balance of four speaker system. (Fig. 4)

Equalizer Control Levers ③

By sliding these levers up and down, the desired sound can be created to match the music. (Fig. 5)

Musical instruments and vocals each possess their respective individual frequency ranges. The graphic equalizer divides these music sources into several frequency bands and since the level of each of these frequency bands can be increased or decreased, fine adjustments can be made which cannot be performed using ordinary tone controls. (Fig. 6)

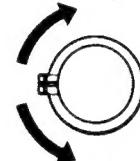
Dolby NR Switch ⑧

When listening to a tape recorded with Dolby NR, press this switch. The Dolby NR Indicator will light. (Fig. 7)

Tape Select Button ⑨

Set this button to the position that corresponds to the type of tape you are using. If the button is pressed, the Metal Indicator will illuminate. (Fig. 8)

Volume level of the front speakers gradually increases.



Volume level of the rear speakers gradually increases.

Fig. 4

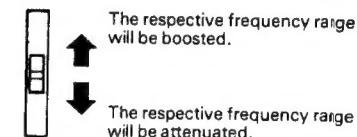


Fig. 5

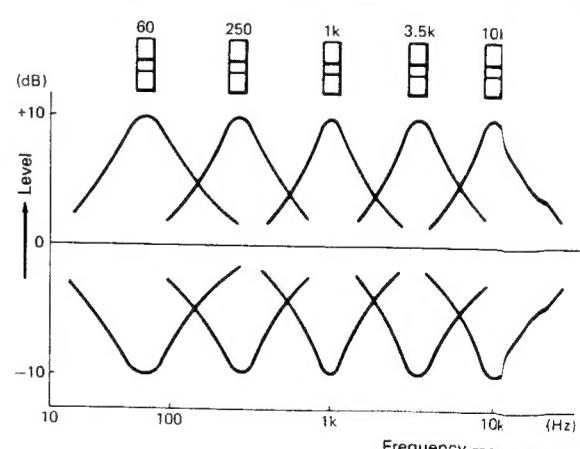


Fig. 6

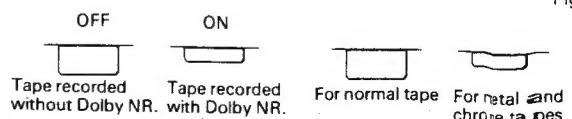


Fig. 7

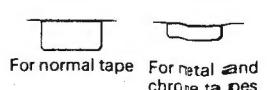
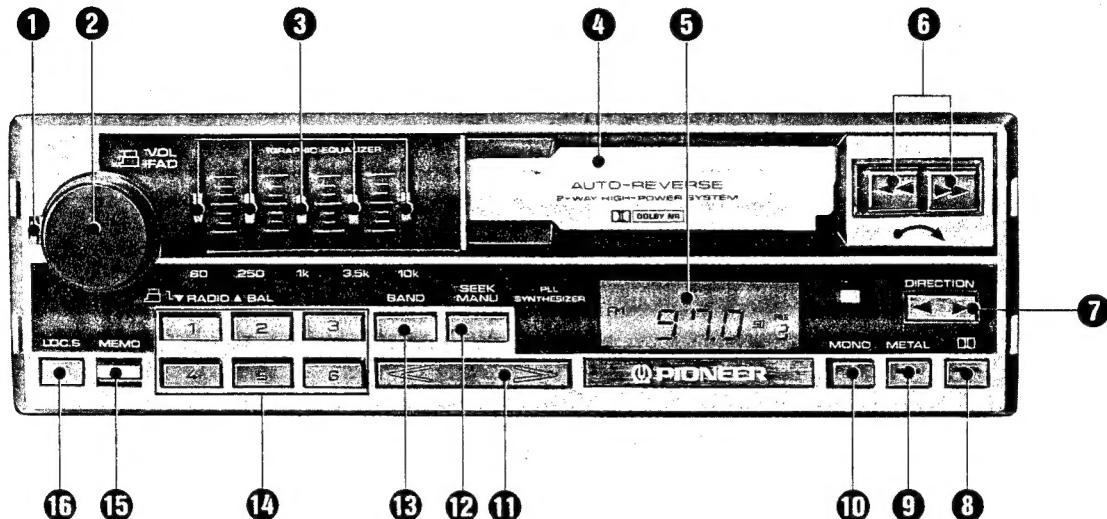
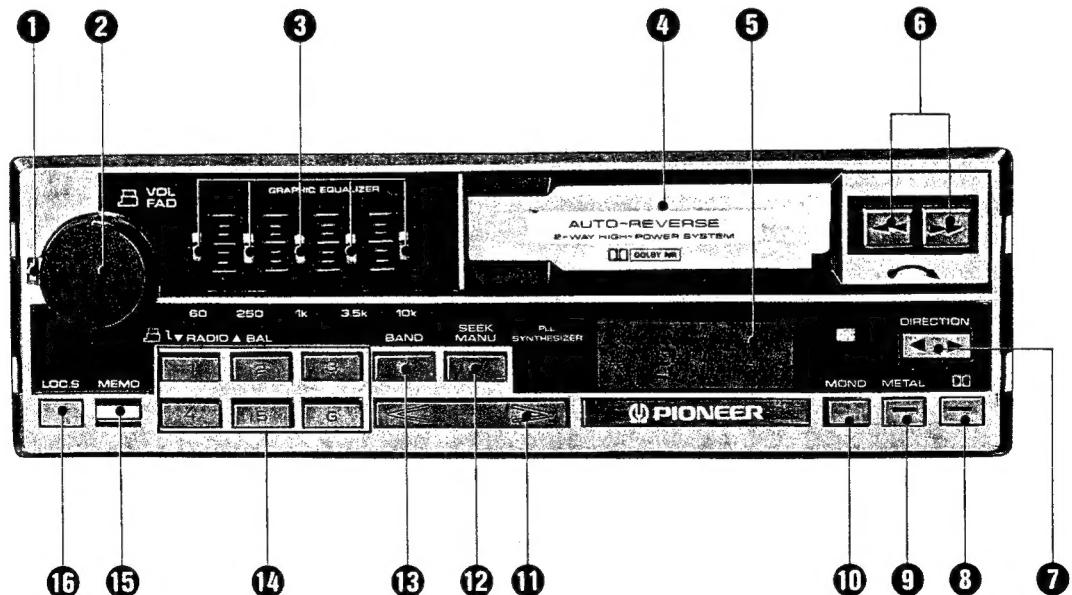


Fig. 8

• KEH-9300



• KEH-9000



To Listen to the Radio (KEH-9300SDK, 9300)

1. When the Radio Power Switch ② is pushed on, the radio frequency will appear on the Digital Display ⑤. (Fig. 9)
2. Press Band Select Button ⑬ to select the desired band and Digital Display ⑤ will illuminate to indicate the band.
3. Tune in desired station.

There are several methods of finding the radio station you wish to listen to.

Manual Tuning

Press Manual/Seek Select Button ⑫ to select Manual Tuning. (Digital Display ⑤ indicates nothing during Manual Tuning but SEEK illuminates during Seek Tuning.) Press the right or left side of Tuning Button ⑪ to set the desired station. (Fig. 10)

FM Band

Each time the \Rightarrow Tuning Button ⑪ is pressed, the frequency increases 25kHz. If you continue to press the button without releasing it, the frequency will continuously increase in 25kHz increments. (Fig. 11)

Each time the \Leftarrow Tuning Button ⑪ is pressed, the frequency decreases 25kHz. If you continue to press the button without releasing it, the frequency will continuously decrease in 25kHz increments. (Fig. 12)

When a strong FM Stereo station is received, the FM Stereo Indicator will illuminate.

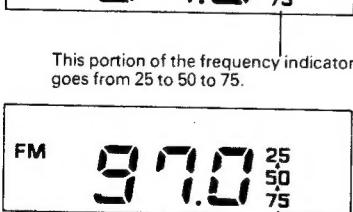
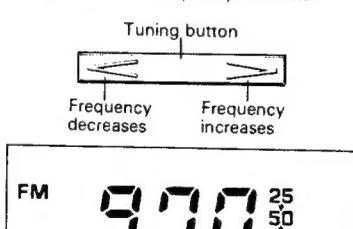
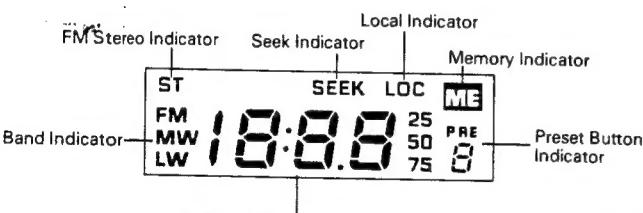


Fig. 12

MW Band

Each time the \Rightarrow Tuning Button ⑪ is pressed, the frequency increases 9kHz. If you continue to press the button without releasing it, the frequency will continuously increase in 9kHz increments.

Each time the \Leftarrow Tuning Button ⑪ is pressed, the frequency decreases 9kHz. If you continue to press the button without releasing it, the frequency will continuously decrease in 9kHz increments.

LW Band

Each time the \Rightarrow Tuning Button ⑪ is pressed, the frequency increases 1kHz. If you continue to press the button without releasing it, the frequency will continuously increase in 1kHz increments.

Each time the \Leftarrow Tuning Button ⑪ is pressed, the frequency decreases 1kHz. If you continue to press the button without releasing it, the frequency will continuously decrease in 1kHz increments.

Seek Tuning

Press Manual/Seek Select Button ⑫ to select Seek Tuning. (At this time, SEEK in the Digital Display ⑤ illuminates).

If the \Rightarrow Tuning Button ⑪ is pressed, the next higher, clearly receivable station will be tuned automatically.

If the \Leftarrow Tuning Button ⑪ is pressed, the next lower, clearly receivable station will be tuned automatically.

Remote Control Seek Switch:

Remote control seek tuning is possible by connecting the accessory Remote Control Seek Switch.

Press the UP side of this switch and the next higher clearly receivable station will be tuned automatically. Press the DOWN side and the next lower, clearly receivable station will be tuned automatically.

Press the Manual/Seek Select Button ⑫ and Manual Tuning is possible at the same time.

FM Band

Each time a Tuning Button ⑪ is pressed, the frequency increases or decreases to the next clearly receivable station in 5kHz increments.

For fine frequency adjustments, return the Manual/Seek Select Button to the Manual position and adjust the frequency using the Tuning Button.

MW Band

Each time a Tuning Button ⑪ is pressed, the frequency increases or decreases to the next clearly receivable station in 9kHz increments.

LW Band

Each time a Tuning Button ⑪ is pressed, the frequency increases or decreases to the next clearly receivable station in 9kHz increments. Since the LW Band frequency range of this unit is 153kHz to 281kHz, stations selectable using Seek Tuning are 155kHz, 164kHz, 173kHz, 182kHz... 272kHz and 281kHz. (During manual tuning, the frequency is changed in increments of 9kHz. When the upper end of the frequency band, 281kHz, is reached during manual tuning, the tuning automatically starts from the lower end, 155kHz, again.)

To tune a station on another frequency, return the Manual/Seek Select Button ⑫ to the Manual position and tune the station in 1kHz increments using the Tuning Button.

To Listen to the Radio (KEH-9000)

1. When the Radio Power Switch ② is pushed on, the radio frequency will appear on the Digital Display ⑤. (Fig. 9)
2. Press Band Select Button ⑩ to select the desired band and Digital Display ⑤ will illuminate to indicate the band.
3. Tune in desired station.
There are several methods of finding the radio station you wish to listen to.

Manual Tuning

Press Manual/Seek Select Button ⑫ to select Manual Tuning. (Digital Display ⑤ indicates nothing during Manual Tuning but SEEK illuminates during Seek Tuning.) Press the right or left side of Tuning Button ⑪ to set the desired station. (Fig. 10)

FM Band

Each time the > Tuning Button ⑪ is pressed, the frequency increases 25kHz. If you continue to press the button without releasing it, the frequency will continuously increase in 25kHz increments. (Fig. 11)

Each time the < Tuning Button ⑪ is pressed, the frequency decreases 25kHz. If you continue to press the button without releasing it, the frequency will continuously decrease in 25kHz increments. (Fig. 12)

When a strong FM Stereo station is received, the FM Stereo Indicator will illuminate.

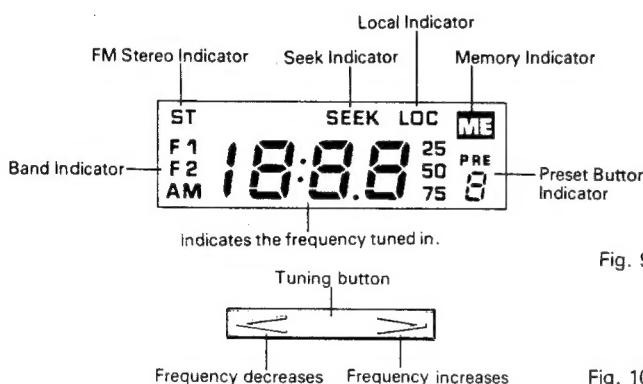


Fig. 9

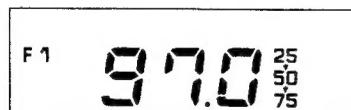


Fig. 11

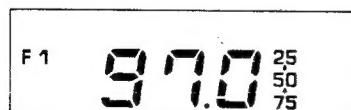


Fig. 12

AM Band

Each time the > Tuning Button ⑪ is pressed, the frequency increases 9kHz. If you continue to press the button without releasing it, the frequency will continuously increase in 9kHz increments.

Each time the < Tuning Button ⑪ is pressed, the frequency decreases 9kHz. If you continue to press the button without releasing it, the frequency will continuously decrease in 9kHz increments.

Seek Tuning

Press Manual/Seek Select Button ⑫ to select Seek Tuning. (At this time, SEEK in the Digital Display ⑤ illuminates).

If the > Tuning Button ⑪ is pressed, the next higher, clearly receivable station will be tuned automatically.

If the < Tuning Button ⑪ is pressed, the next lower, clearly receivable station will be tuned automatically.

Remote Control Seek Switch:

Remote control seek tuning is possible by connecting the accessory Remote Control Seek Switch.

Press the UP side of this switch and the next higher clearly receivable station will be tuned automatically. Press the DOWN side and the next lower, clearly receivable station will be tuned automatically.

Press the Manual/Seek Select Button ⑫ and Manual Tuning is possible at the same time.

FM Band

Each time a Tuning Button ⑪ is pressed, the frequency increases or decreases to the next clearly receivable station in 50kHz increments.

For fine frequency adjustments, return the Manual/Seek Select Button to the Manual position and adjust the frequency using the Tuning Button.

AM Band

Each time a Tuning Button ⑪ is pressed, the frequency increases or decreases to the next clearly receivable station in 9kHz increments.

Programming Stations (KEH-9300SDK, 9300)

You can preset a total of 18 stations (six FM, six MW and six LW) using the six feather-touch Preset Buttons. One button can store one station each for FM, MW and LW.

1. Press Band Select Button ⑬ and Digital Display ⑤ will display FM.
2. Tune to the desired station using Manual Tuning or Seek Tuning.
3. Press the Memory Button ⑯ and the Memory Indicator (ME) will illuminate on the Digital Display ⑤. Press one of the Preset Buttons ⑭ during the 5-second period that the Memory Indicator is illuminated. At this time the number of the preset button will illuminate. (Fig. 13)
4. One station has now been memorized for one of the Preset Buttons. Repeat steps (2) and (3) for each of the remaining five Preset Buttons.
5. Switch Band Select Button ⑬ to MW and then LW, and repeat steps (2), (3) and (4).
- Preset Button Indicator PRE is not illuminated for Manual Tuning or Seek Tuning. (Number display is unchanged.)

Local Station Seek Switch ⑯

At night when FM/MW/LW station broadcast signals are too strong, press this switch when unwanted stations often come in when using Seek Tuning. (At this time, LOC in the Digital Display ⑤ illuminates). Tuner sensitivity is not affected after a station is locked on.

Press the switch again and LOC display goes out.

FM Auto/Mono Select Button ⑩

This button will only function with an FM broadcast. (Fig. 14)

FM Auto: In most cases, this button should be left in this position. The following functions are automatically activated according to the strength of the incoming FM signal:

- Hi-Fi stereo quality is reproduced with a strong FM stereo signal.
- Reception is automatically controlled (stereo separation is gradually narrowed and high frequency is slightly attenuated) to reduce background noise as the incoming signal weakens. Eventually, reception is switched to monaural.

FM Mono: For monaural reception, regardless of the strength of the incoming FM signal or whether it is stereo or monaural.

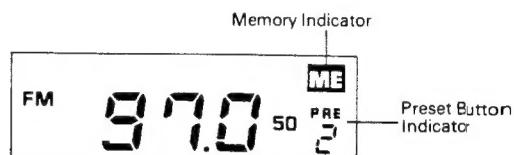


Fig. 13



Fig. 14

Programming Stations (KEH-9000)

You can preset a total of 18 stations (six FM1, six FM2 and six AM) using the six feather-touch Press Buttons. One button can store one station each for FM1, FM2 and AM. To listen to an FM broadcast, set to either FM1 or FM2. Both FM1 and FM2 are in a frequency band between 87.5 and 108MHz.

1. Press Band Select Button ⑬ and Digital Display ⑤ will display FM1.
2. Tune to the desired station using Manual Tuning or Seek Tuning.
3. Press the Memory Button ⑯ and the Memory Indicator (ME) will illuminate on the Digital Display ⑤. Press one of the Preset Buttons ⑭ during the 5-second period that the Memory Indicator is illuminated. At this time the number of the Preset Button will illuminate. (Fig. 13)
4. One station has now been memorized for one of the Preset Buttons. Repeat steps (2) and (3) for each of the remaining five Preset Buttons.
5. Switch Band Select Button ⑬ to FM2 and then AM, and repeat steps (2), (3) and (4).
- Preset Button Indicator PRE is not illuminated for Manual Tuning or Seek Tuning. (Number display is unchanged.)

Local Station Seek Switch ⑯

At night when FM/AM station broadcast signals are too strong, press this switch when unwanted stations often come in when using Seek Tuning. (At this time, LOC in the Digital Display ⑤ illuminates). Tuner sensitivity is not affected after a station is locked on.

Press the switch again and LOC display goes out.

FM Auto/Mono Select Button ⑩

This button will only function with an FM broadcast. (Fig. 14)

FM Auto: In most cases, this button should be left in this position. The following functions are automatically activated according to the strength of the incoming FM signal:

- Hi-Fi stereo quality is reproduced with a strong FM stereo signal.
- Reception is automatically controlled (stereo separation is gradually narrowed and high frequency is slightly attenuated) to reduce background noise as the incoming signal weakens. Eventually, reception is switched to monaural.

FM Mono: For monaural reception, regardless of the strength of the incoming FM signal or whether it is stereo or monaural.

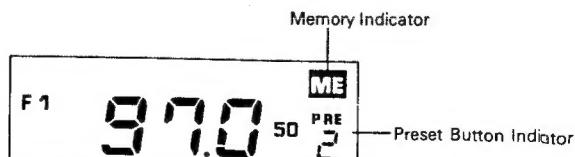


Fig. 13



Fig. 14

To Listen to Traffic Information (KEH-9300SDK)

- Push Radio Power Switch ②. Press Band Select Button ⑬ and Digital Display ⑬ will illuminate to indicate FM. (Fig. 15)
- Press SDK Switch ⑦ and Digital Display will illuminate. Press Tuning Button ⑪ to receive traffic information broadcasts for the area through which you are driving. The SK indicator will illuminate when a signal is received.
- The volume will become louder when a traffic information announcement is received during a broadcast. Volume cannot be lowered by turning the Volume Control ② to the left.
- As the traffic information broadcast signal weakens, and you reach an area where the signal cannot be picked up at all, the SK Indicator will go out, indicating that traffic information can no longer be monitored. If this situation persists for more than 30 seconds, an alarm will beep to alert the driver. In such a case, either receive another traffic information broadcast station, turn the SDK Switch ⑦ off, or switch to the MW or LW band by pushing the Band Select Button ⑬.

Note:

Keep the SDK Switch off to listen to FM broadcast that is not a traffic information broadcast.

- Traffic information can be monitored in tape playback, fast forward and rewind modes.
- To listen to tape only, turn SDK Switch or Radio Power Switch off. Press Band Select Button to select an MW or LW station.

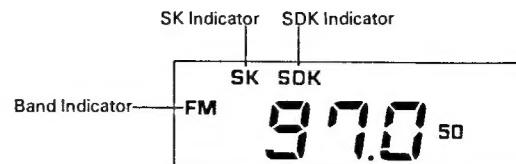
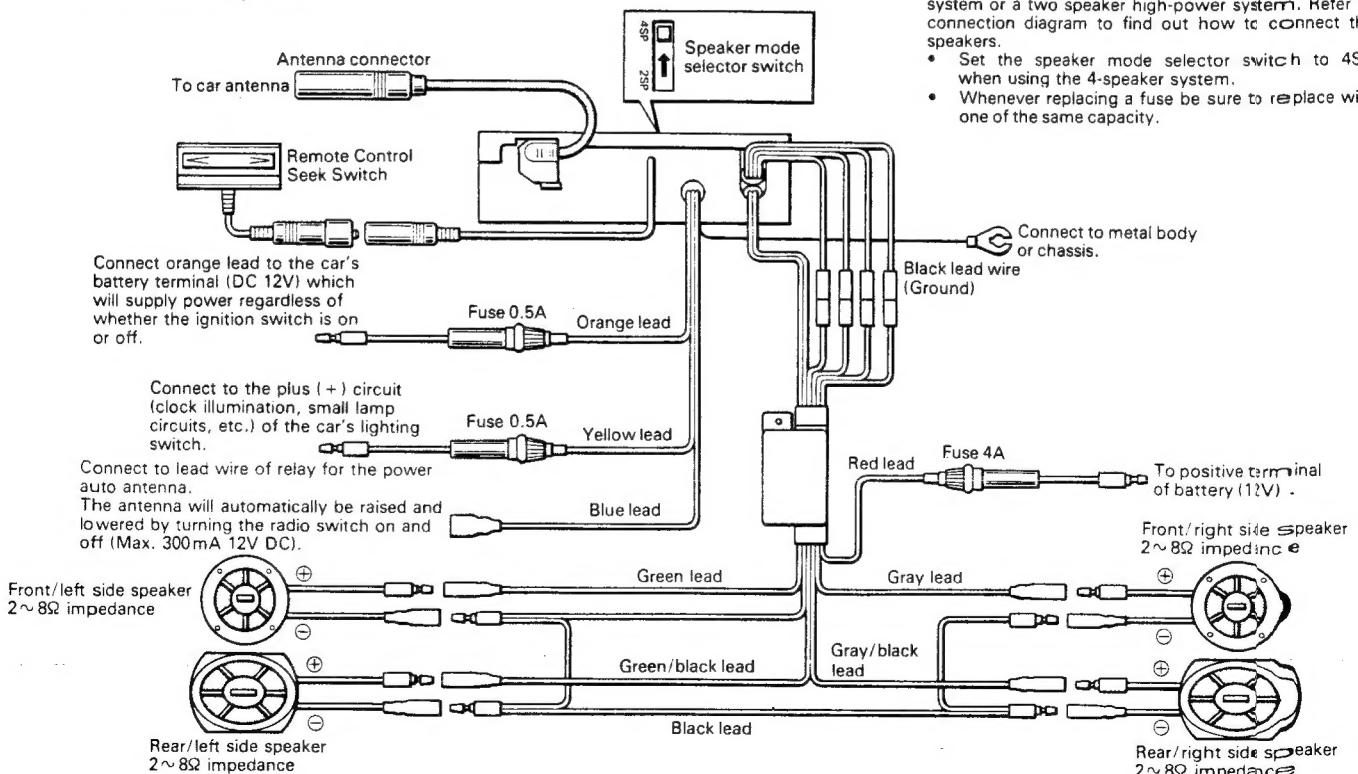


Fig. 15

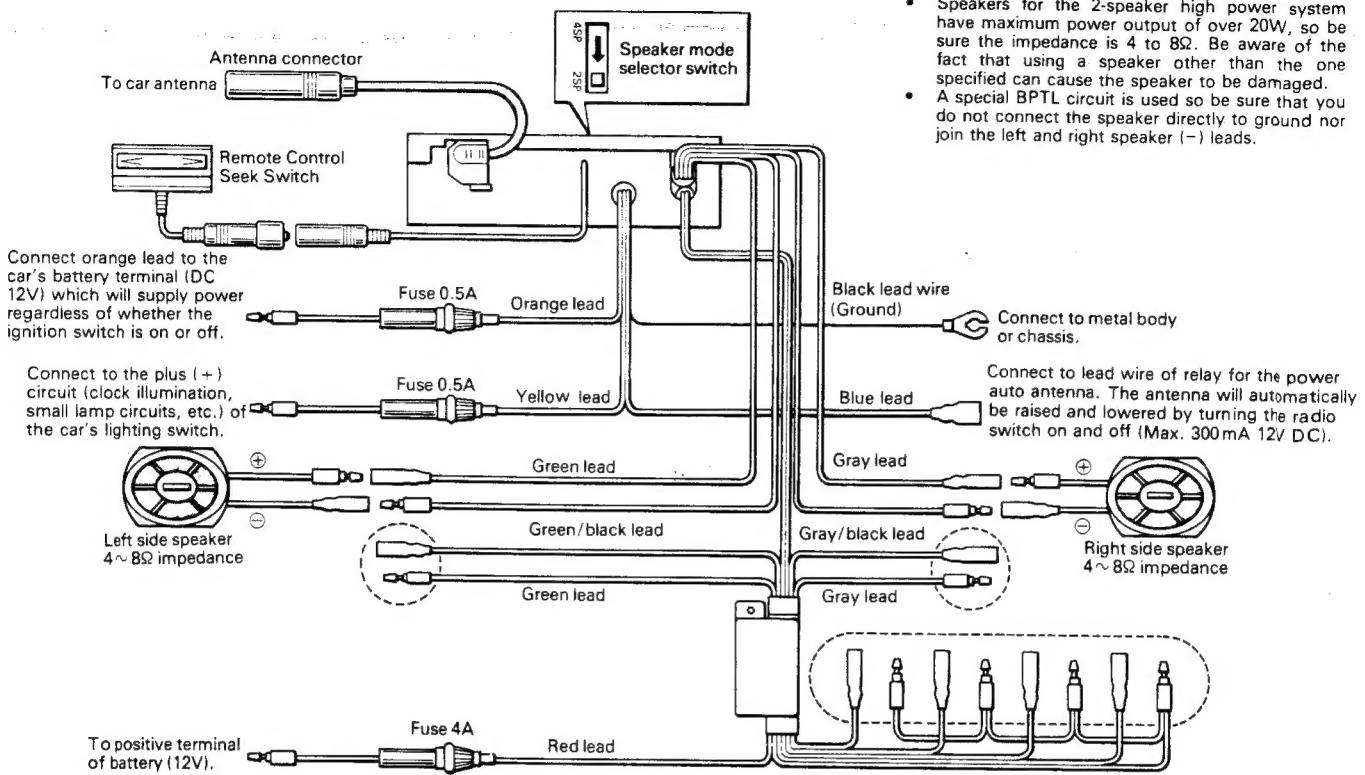
3. CONNECTION

3.1 KEH-9300SDK, 9000

• Four-speaker System



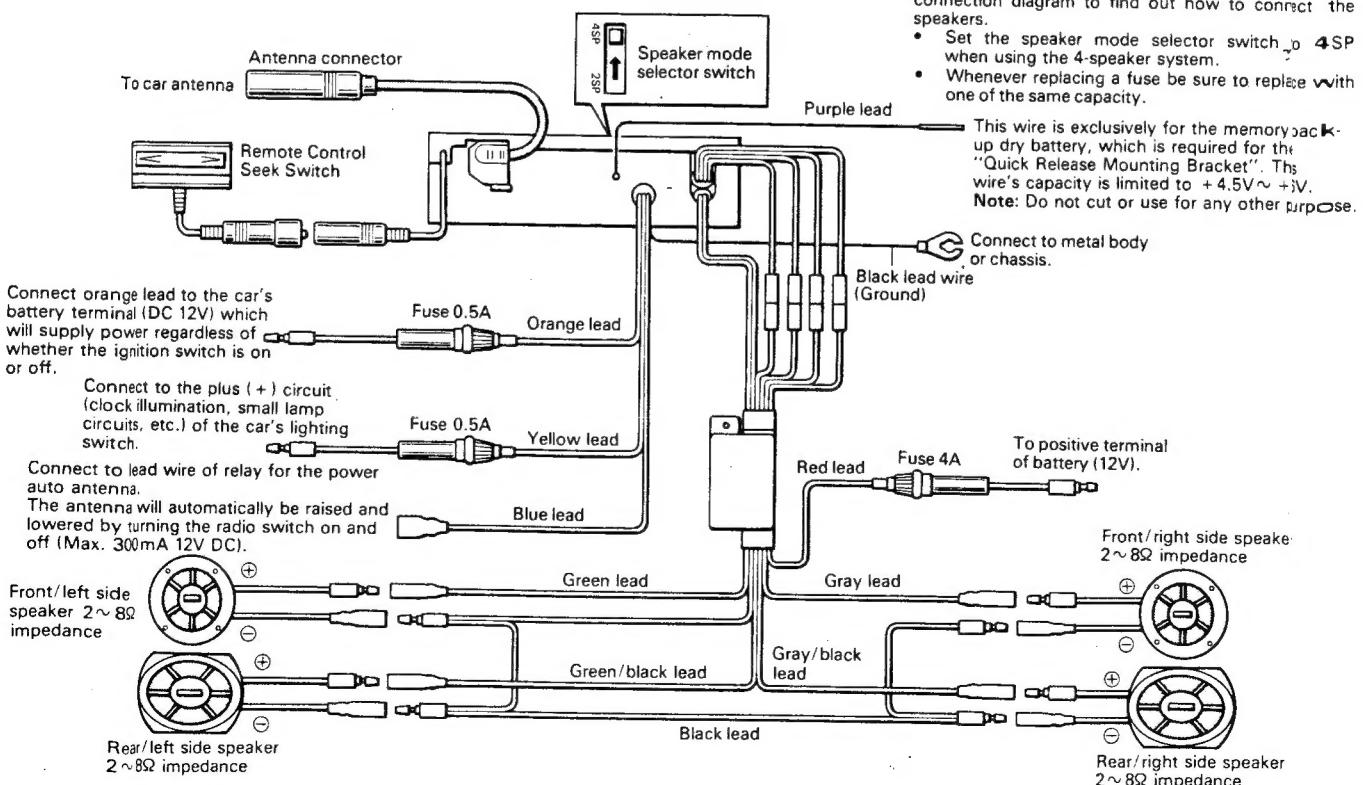
• Two-speaker High-power System



- Set the speaker mode selector switch to 2SP when using the 2-speaker high-power system.
- Speakers for the 2-speaker high power system have maximum power output of over 20W, so be sure the impedance is 4 to 8Ω. Be aware of the fact that using a speaker other than the one specified can cause the speaker to be damaged.
- A special BPTL circuit is used so be sure that you do not connect the speaker directly to ground nor join the left and right speaker (-) leads.

3.2 KEH-9300

• Four-speaker System

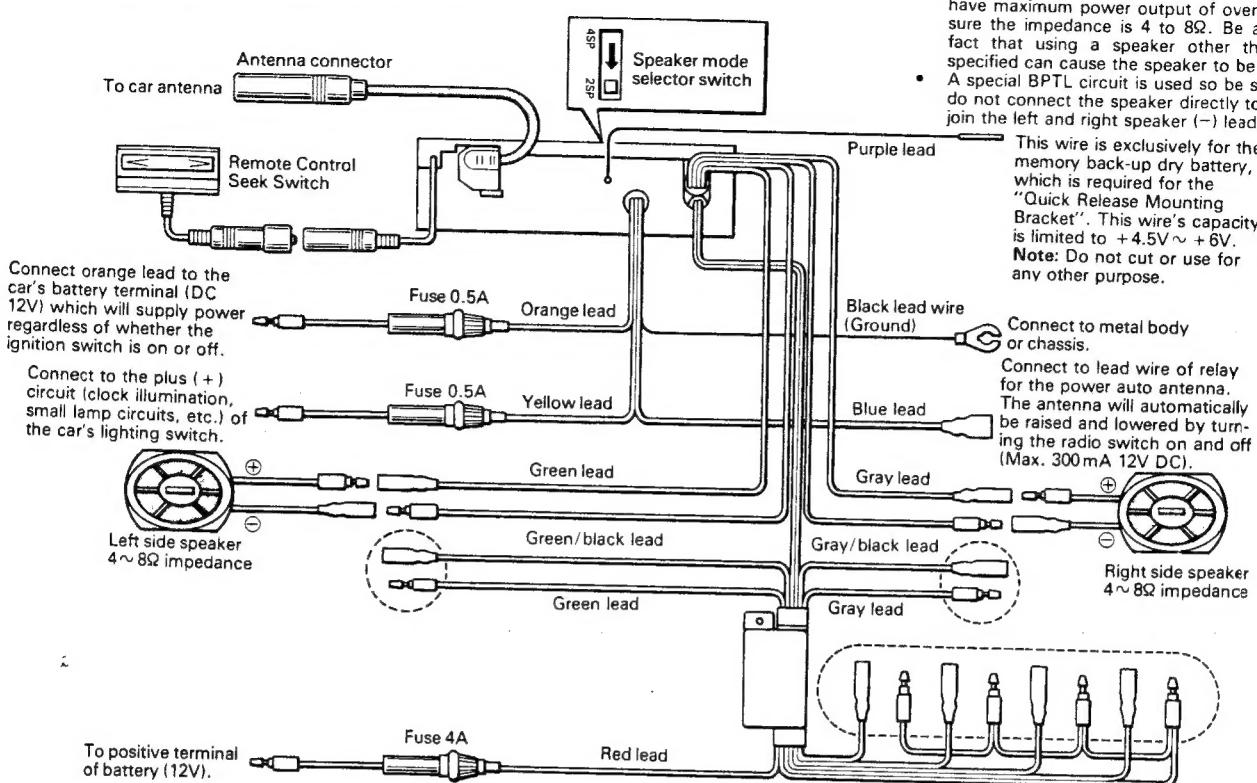


This unit can be operated with either a four-speaker system or a two speaker high-power system. Refer to connection diagram to find out how to connect the speakers.

- Set the speaker mode selector switch to 4SP when using the 4-speaker system.
- Whenever replacing a fuse be sure to replace with one of the same capacity.

This wire is exclusively for the memory back-up dry battery, which is required for the "Quick Release Mounting Bracket". This wire's capacity is limited to +4.5V~+15V. Note: Do not cut or use for any other purpose.

- **Two-speaker High-power System**



4. CIRCUIT DESCRIPTION

- Level Diagram

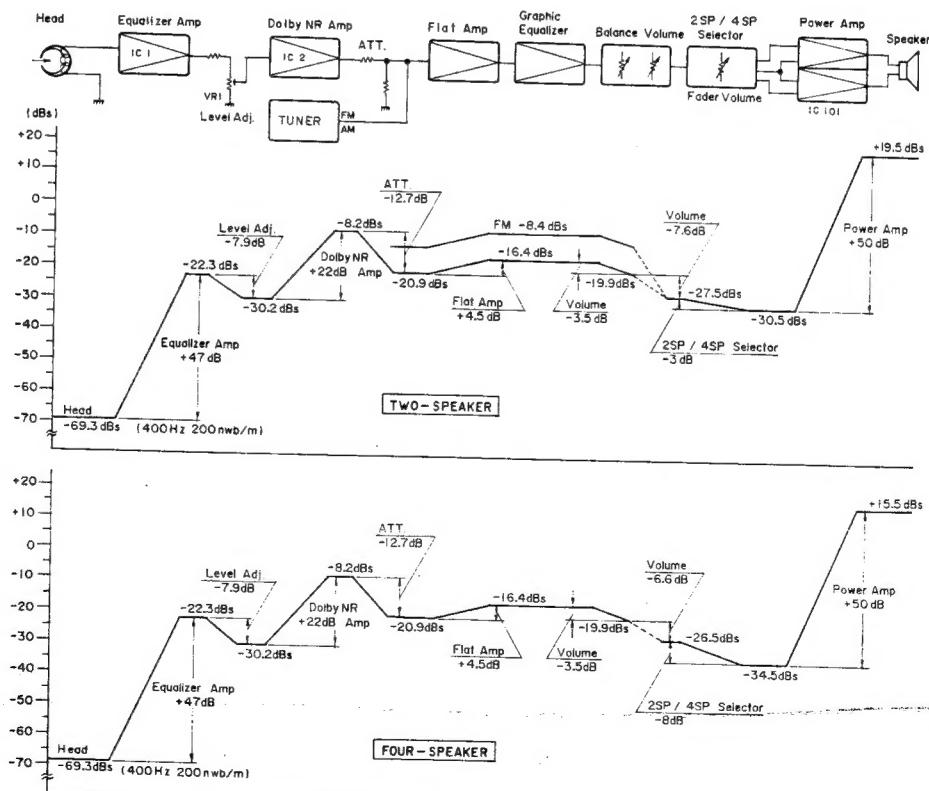


Fig. 1

- Set the speaker mode selector switch to 2SP when using the 2-speaker high-power system.
- Speakers for the 2-speaker high power system have maximum power output of over 20W, so be sure the impedance is 4 to 8Ω. Be aware of the fact that using a speaker other than the one specified can cause the speaker to be damaged.
- A special BPTL circuit is used so be sure that you do not connect the speaker directly to ground nor join the left and right speaker (-) leads.

This wire is exclusively for the memory back-up dry battery, which is required for the "Quick Release Mounting Bracket". This wire's capacity is limited to $+4.5V \sim +6V$. **Note:** Do not cut or use for any other purpose.

Connect to metal body or chassis.

Connect to lead wire of relay for the power auto antenna. The antenna will automatically be raised and lowered by turning the radio switch on and off (Max. 300 mA 12V DC).

Right side speaker
4~8Ω impedance

• Block Diagram (KEH-9300SDK)

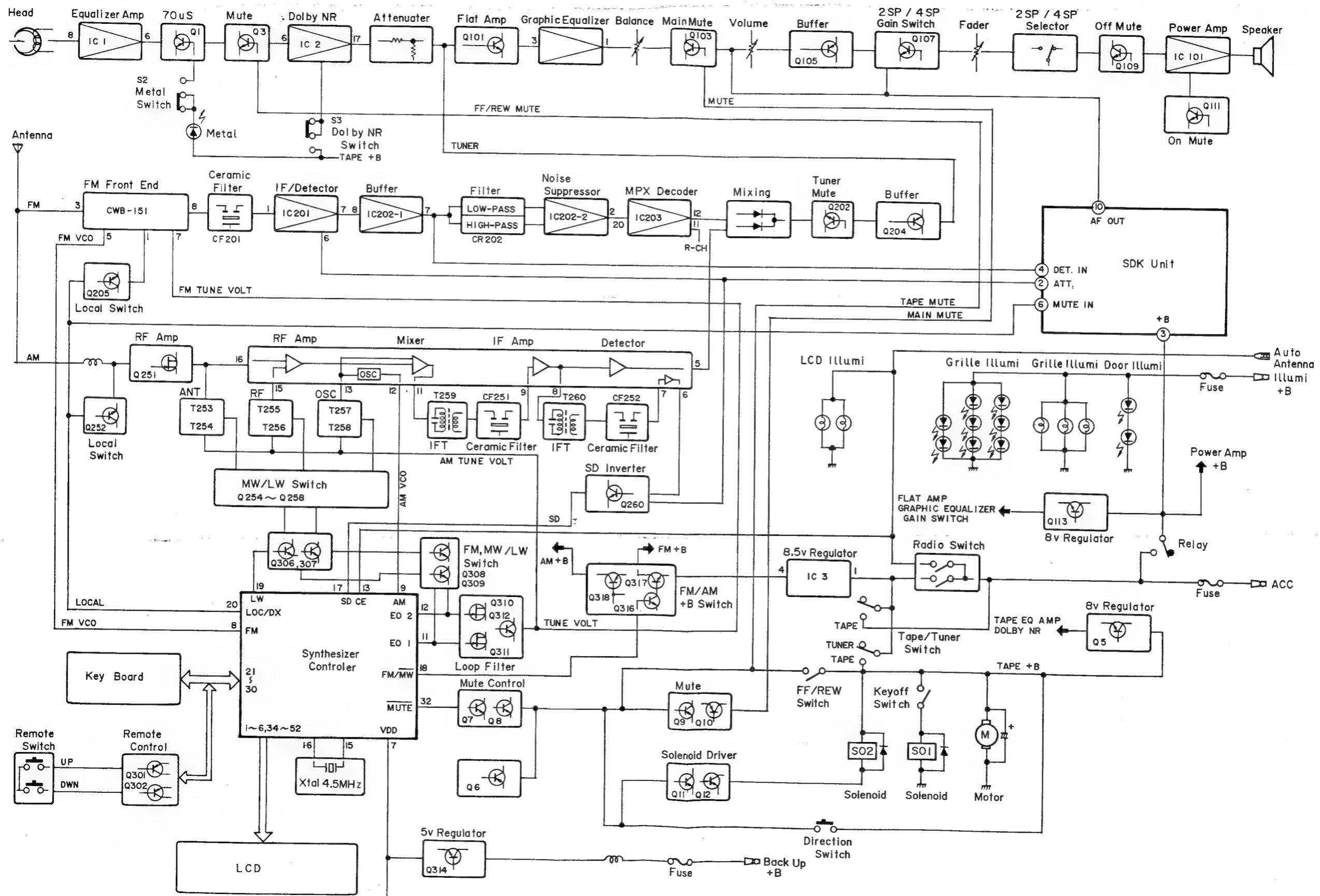
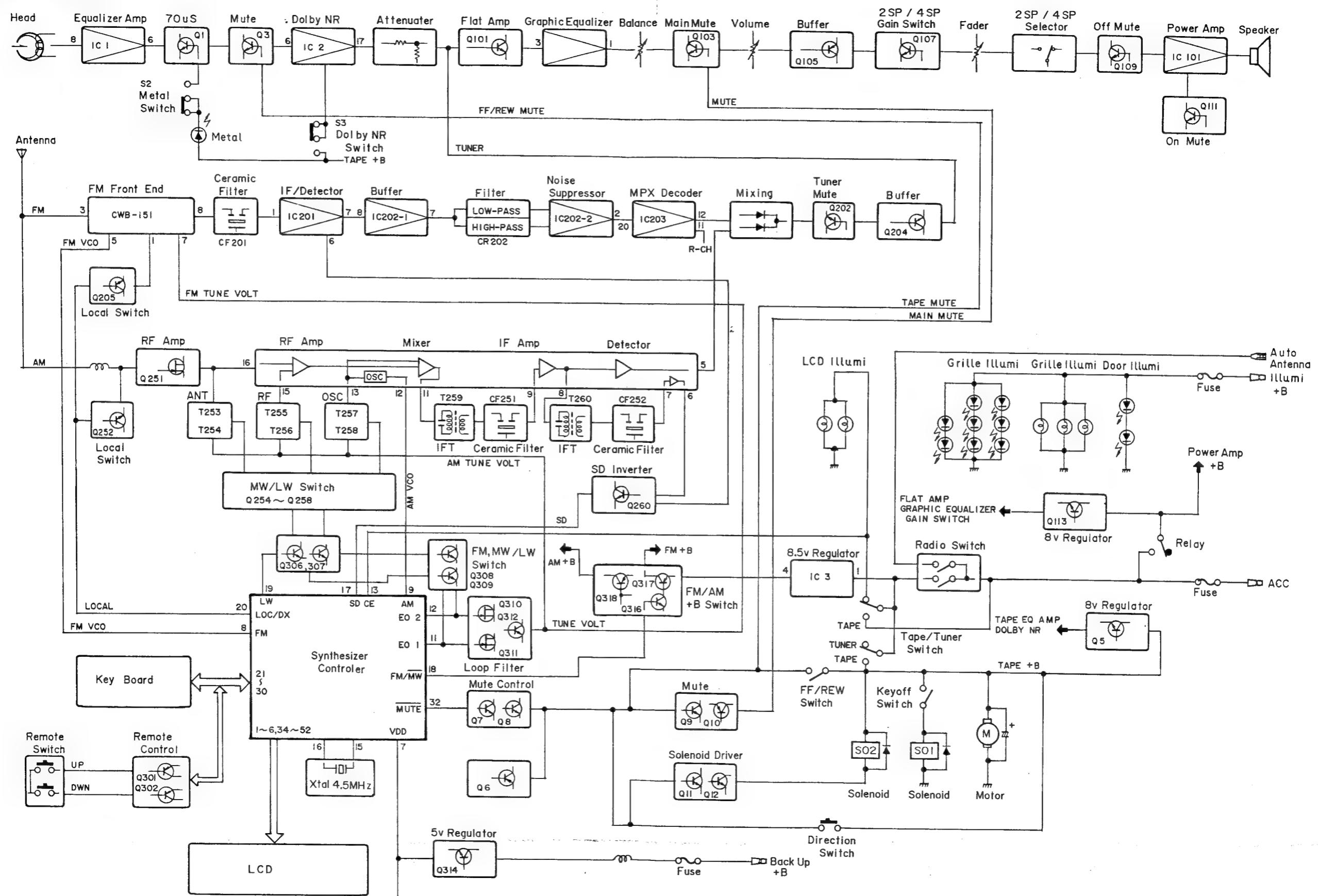


Fig. 2

• Block Diagram (KEH-9300)



• Block Diagram (KEH-9000)

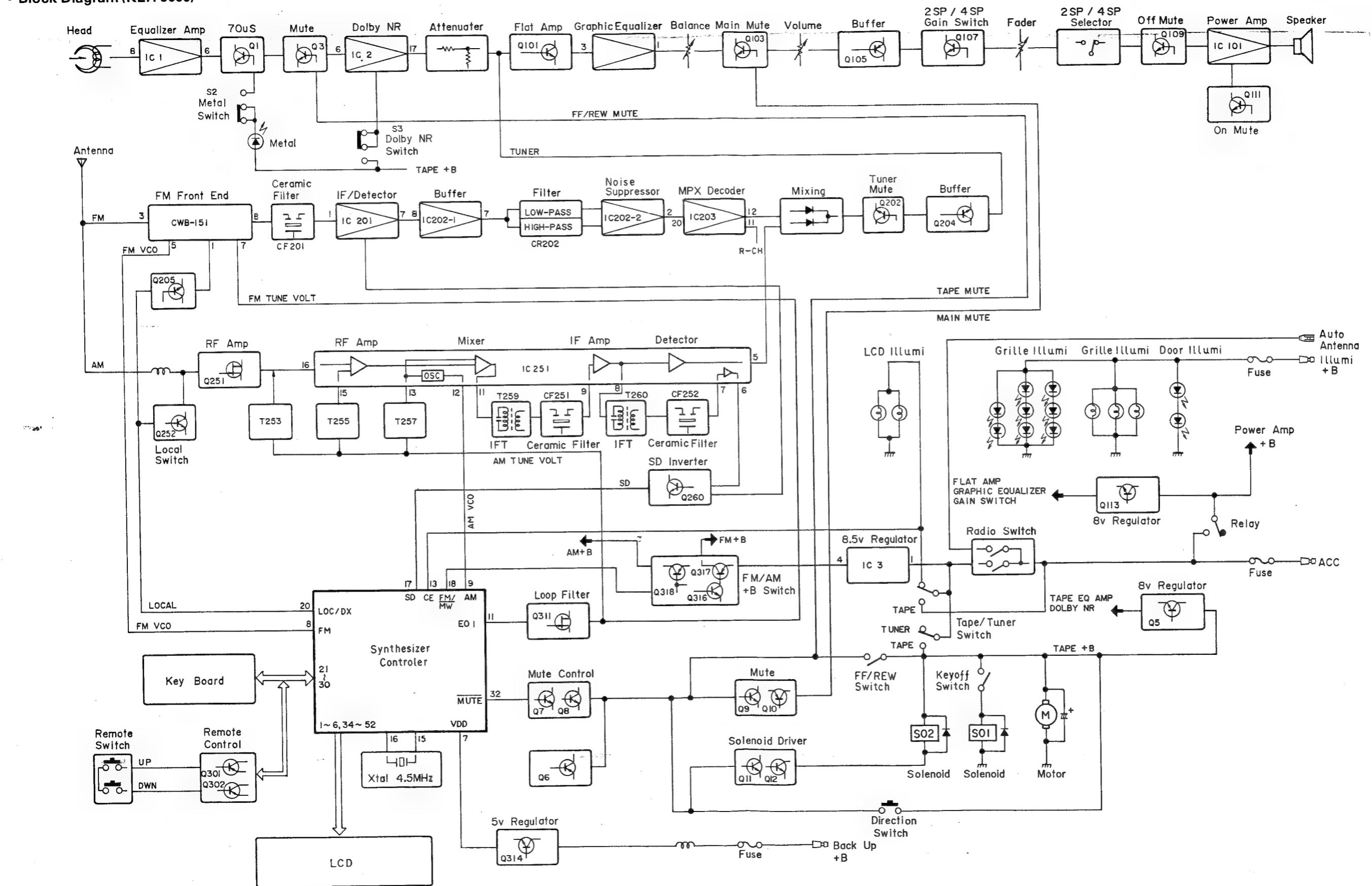
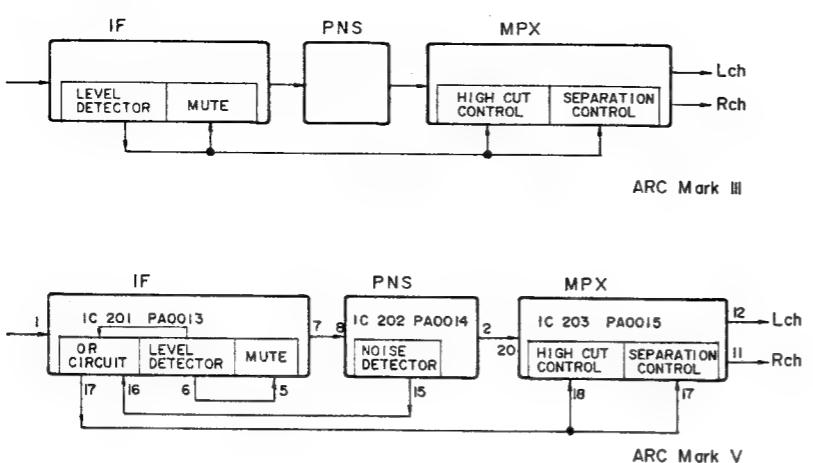


Fig. 4

• Operation of FM Section



2. IF detector section

A single-tuning quadrature detection is performed by IC PA0013 using IF amp and T201 to obtain an audio frequency output.

3. PNS section

This is a pulse noise canceller using IC PA0014 and CR composite part CR201 which comprises filters.

4. Multiplexer section

Stereo multiplexing is performed by IC PA0015. This IC does not operate the stereo circuit in the absence of current flowing through the stereo indicator terminal (pin 3).

5. Muting of weak incoming signals

IC PA0013 develops a DC voltage at pin 6 when the input is weak or detuned. When this voltage is applied to pin 5 through the filter consisting of capacitors and resistors, the attenuator goes into operation. The on/off (AUTO/MONO) of this weak input signal muting is controlled. The stop signal for the seek operation uses a voltage developed at pin 6. (During broadcast reception, the voltage is at 0V).

6. Local station seeking

While seeking strong signal stations, the gain of the front end is decreased by making the voltage at AGC terminal in the front end 4.5V by Q205.

7. Separation control, high frequency control.

Pin 17 of IC203 (PA0015) functions as the separation control (SNC) pin, and pins 18 and 19 function as the high-cut control (HCC) pins. SNC and HCC are controlled by the control voltage from pin 17 of IC201 (PA0013). The control voltage can be varied by adjusting semi-fixed volume VR201, connected to pin 20 of IC201. SNC and HCC are controlled by the input signal strength level. However, these are also controlled by the noise detector level from IC202 (PA0014, PNS), unless the input signal strength is below 35 dB μ V. The noise detector output from pin 7 of CR201 is input to pin 16 of IC201. The noise detector control of the high-cut and separation will switch on above 35 dB μ V.

8. Mono/stereo

When the Mono switch is turned on, pin 6 of IC203 (PA0015) will be grounded, the stereo indicator will go out, and the output will switch to monaural. Pin 5 (MUTE DRIVE PIN) of IC201 (PA0013) will also be grounded, disengaging the level mute. Only for model KEH-9300SDK, pin 5 of IC201 will be grounded through Q315, disengaging the level mute. Q315 will go off when the SDK switch is turned on. Thus the level mute will not be disengaged.

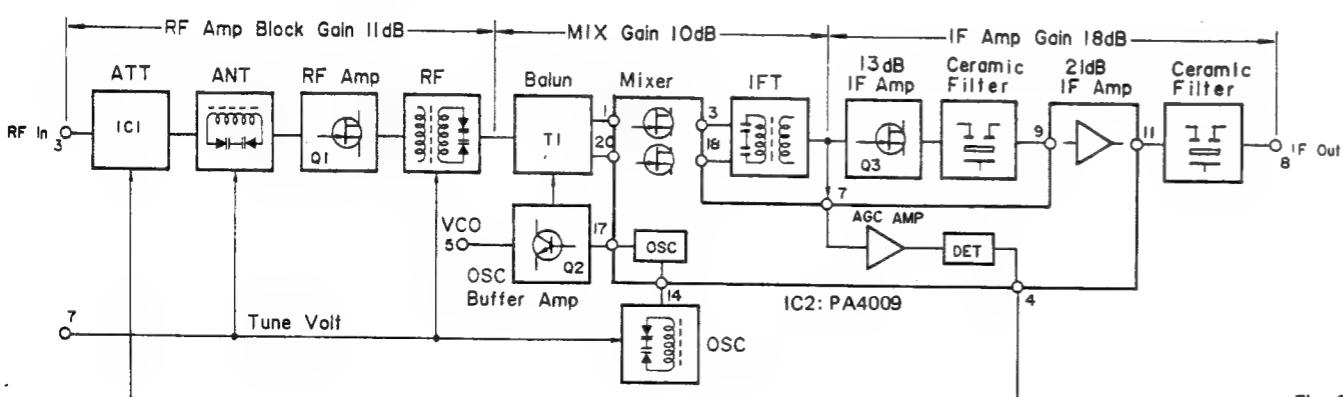
ARC Mark V

The high-cut and separation, which were controlled by the input signal strength level in the ARC Mark III, can also be controlled by the noise level in the ARC Mark V. Therefore noise in strong signal areas, impossible to suppress before, can now be suppressed adequately.

Noise Detector Circuit

Co-using the PNS HIGH PASS FILTER, this operates by detecting the components above 100 kHz in the wave detector output. The HPF output is amplified to a sufficient level, rectified, phase reversed and then DC converted.

1. Front end section



2. VCO section

The VCO (voltage-controlled oscillator) oscillates at its resonant frequency by the feedback circuit from pin 12 to pin 13 and the resonant circuit connected to pin 13. The resonant frequency is determined by the inductance of T257 and the composite capacitance of C_A, C_B, and D255-2.

C_A is a padding capacitor connected in series with capacitance-varying varicap diode D255-3, and C_B is a capacitor connected in parallel with varicap diode depending on its grade. All this contributes to better tracking with the RF stage.

The RF signal from the antenna passes through an attenuator constructed as a band-pass filter and is sent to the pi-shaped matching circuit, where high-end spurious response is improved. The signal then goes to the next stage, the RF amp. The RF amp employs a MOS FET capable of handling a wide dynamic range. The output from the RF amp passes through a parallel resonance circuit, is converted to a balanced signal from an unbalanced by a balun circuit and then

goes to the mixer stage. This is a J-FET single balance type mixer which can accommodate a wide dynamic range. One of the IF signals from the mixer passes through the IF amp and ceramic filters. Another IF signal goes to the AGC amp. This AGC amp can operate even in the presence of interference signals. The AGC amp output is fed back to the RF attenuator circuit, forming a wide loop AGC. The AGC circuit operates at antenna input levels above 65 ± 5 dB.

3. Mixer section

The VCO output frequency from the VCO section and the input signal from RF amp 1 are mixed together at the mixer section to produce the IF component (450 kHz).

4. IF section

The intermediate frequency section consists of the IF filter (450 kHz) by T259 and CF251, the IF amp 1 and the IF filter by T260. Pin 8 is not only a load connecting terminal of the IF amp but also an input terminal of the detector circuit 1.

5. Detector section

Pin 8 is connected to the detector and provides an output to pin 5, audio output. This output contains both audio frequency component (AC) and DC component.

6. AGC section (AGC by the reception frequency)

The DC component of the detector output at pin 5 is detected by AGC amp 1 at pin 1 by passing it through the filter consisting of R273 and C285. The AGC starts operating at an input level close to the maximum sensitivity. The output of AGC amp 1 is connected to AGC amp 2 and controls the gain of RF amp 1.

The AGC voltage is developed at pin 3 through AGC amp 3, and current flows through D251 and D252, lowering the impedance. As a result, attenuation is effected.

When Q253 turns on and the load impedance of the radio of Q251 is lowered, attenuation is effected. These attenuations due to the decrease in impedance enable AGC opera-

tion. The input level to develop a voltage at pin 3 is about 55 dB μ V during reception of MW 999 kHz.

Thanks to the AGC operation mentioned above, the output variation characteristics against input variation are broader than the conventional AM characteristics.

7. AGC section (wide-band AGC)

The wide-band AGC is to control the gain of the RF amplifier section when the input RF level at pin 16 is high. This is intended to prevent interference due to the saturations of RF amp Q251, RF amp 1 in the IC, etc. Caused by a large input other than the reception frequency.

Operation is as follows: A DC voltage corresponding to the level of the input RF is developed at pin 2 by amplifying and detecting the RF signal from pin 16 by RF amp 2 and detector 3 respectively. This is delayed by the time constant of C284 and the gain of this portion is determined by R270. By applying this DC voltage to AGC amp 2, the AGC at RF amp 1 and AGC at Q253, D251 and D252 are effected.

8. Stop signal

The stop signal for seek operation is produced by extracting the IF signal from the secondary winding of T8 and adjusting its level by R287, R286 and R285. This signal is connected via 450 kHz filter CF252 from pin 7 to IF amp 2 to detector 2. This output appears at pin 6 and becomes 0V during reception.

9. Local station/distant station seek

During local station seek, Q252 turns on, whereby C253 is grounded. The impedance of C253 allows attenuation in the antenna system.

• Frequency Synthesizer Section (FM)

During FM reception, a combination of synthesizer control IC301 (the frequency dividing ratio is controlled to 1/64 or 1/66 by IC301) allow the slower counter method.

The FM VCO is frequency-divided to a ratio of 1/64 or 1/66 by prescaler IC301.

An output of 4.5 MHz (X101) which becomes a clock pulse for IC301 is divided into 1/180 by the reference frequency divider to produce 25 kHz (all this is processed inside IC301). Since the reception frequency is 87.5 ~ 108.0 MHz and the intermediate frequency (IF) is 10.7 MHz, the oscillator frequency of VCO will be 98.2 ~ 118.7 MHz.

As the overall frequency division ratio is 7856 ~ 9496, the output of the programmable counter inside IC301 will be 25 kHz. This output is compared in phase with a reference frequency of 25 kHz by the phase detector in IC301, and is output to pin 12 of IC301.

The loop filter consisting of Q310 and Q312 converts the signal into a DC voltage signal which in turn controls the tuning circuit in the front end section as a tuning voltage.

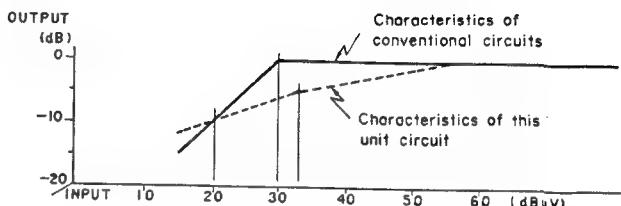


Fig. 7

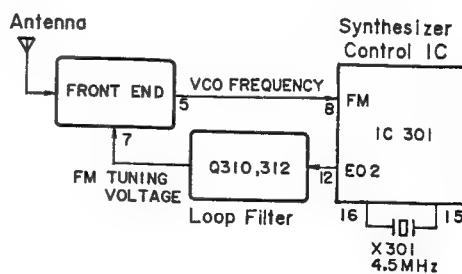


Fig. 8

• Frequency Synthesizer Section (MW)

The MW section employs a direct frequency dividing method. So that the reception frequency is incremented in 9 kHz, the frequency of the phase comparator is 9 kHz. This is produced by dividing 4.5 MHz (the output of X101), a clock frequency of IC301, to 1/500. Since the reception frequency range is 531 ~ 1,602 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) will be 981 ~ 2,052 kHz.

This output is output from pin 12 of IC5 and enters pin 9 of IC301.

If the frequency dividing ratio of the programmable counter in IC301 is set to 109 ~ 228, the output will be 9 kHz. This frequency is compared in phase with a reference frequency of 9 kHz by the phase comparator and is output from pin 12 of IC301.

The signal is converted into a DC voltage signal by the loop filter consisting of Q310 and Q311, which in turn controls the tuning circuit as a tuning voltage.

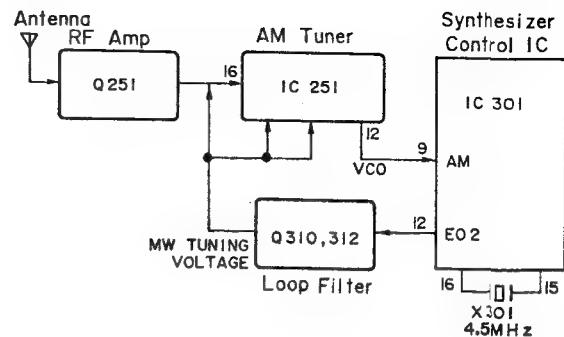


Fig. 9

• The Functions of Control IC (PD4041)

PD4041 is a 52-pin flat package C-MOS LSI which controls 10 kHz incremental tuning for FM, 9 kHz incremental tuning for AM. This PLL type frequency synthesizer tuner control IC makes possible 7-segment digital display. Since this IC employs a static method for the display driver, the performance of the receiver is improved.

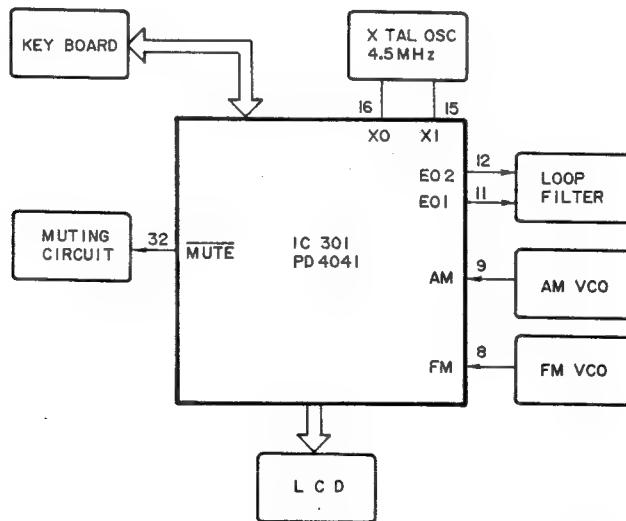


Fig. 10

• Frequency Synthesizer Section (LW)

The LW section employs a direct frequency dividing method. So that the reception frequency is incremented in 1 kHz, the frequency of the phase comparator is 1 kHz. This is produced by dividing 4.5 MHz (the output of X101), which is a clock frequency of IC301, into 1/4500.

Since the reception frequency range is 155 ~ 281 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) is 605 ~ 731 kHz. This output is output from pin 12 of IC251 and enters pin 9 of IC301.

If the frequency dividing ratio of the programmable counter in IC301 is set to 605 ~ 731, the output frequency is 1 kHz. This is compared in phase with a reference frequency of 1 kHz by the phase comparator and is output from pin 11 of IC301. The output signal is converted into a DC voltage signal by the loop filter consisting of Q311 and Q312, which in turn controls the tuning circuit as a tuning voltage.

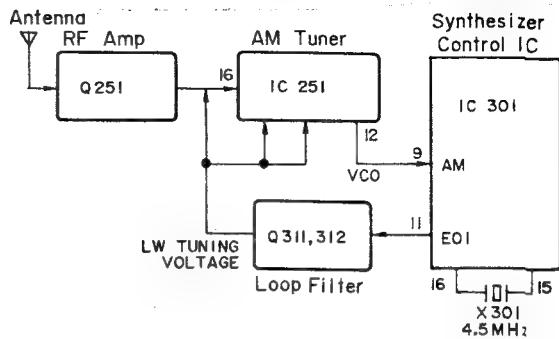


Fig. 11

• Control IC PD4041

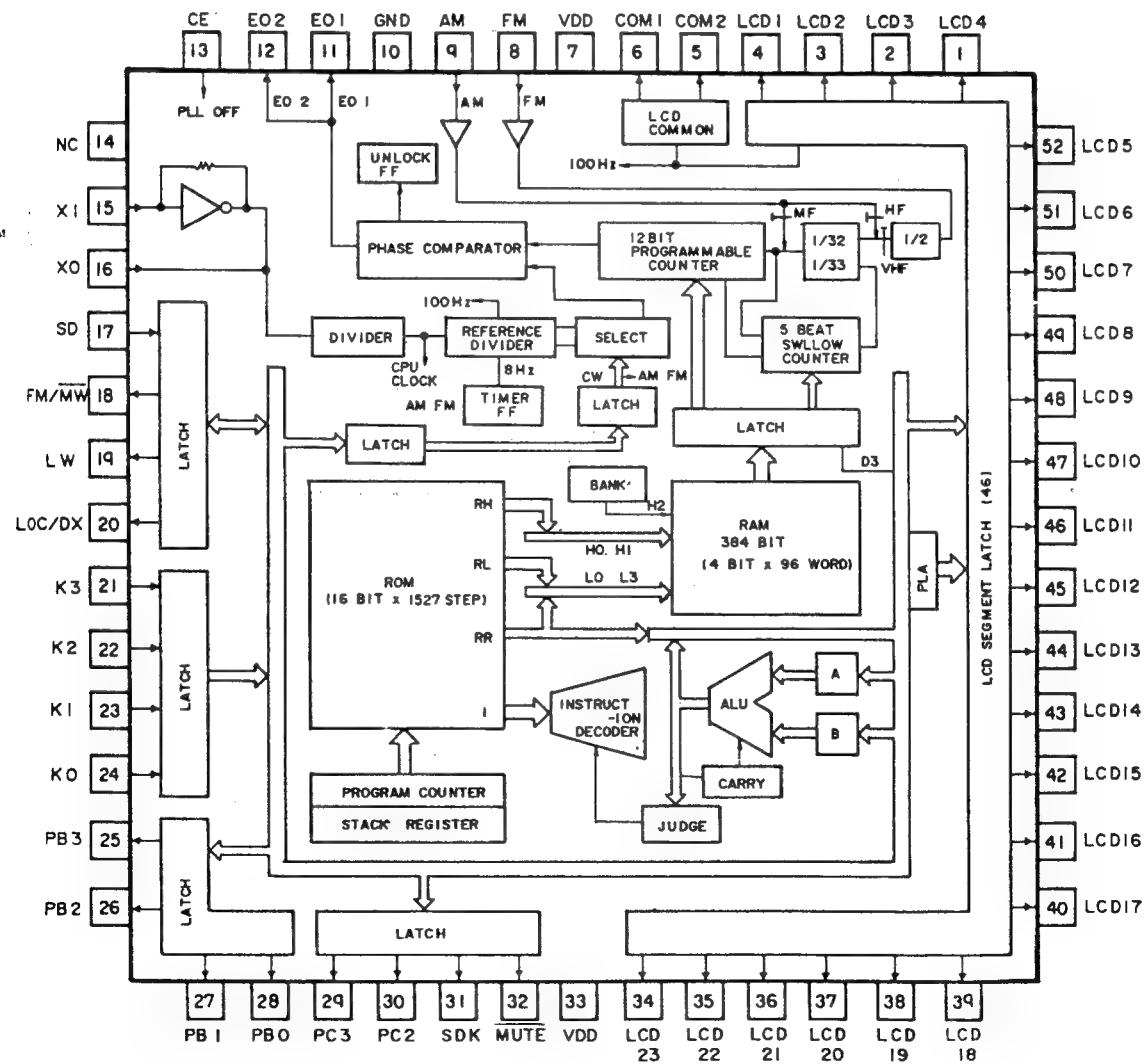


Fig. 12

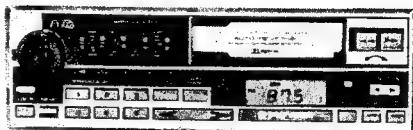
• PIN FUNCTIONS (PD4041)

| Pin No. | Pin Name | I/O | Function and Operation |
|-------------------------|------------------------------|-----|---|
| 34 2 52 1 4 | LCD23 LC5 LCD4 LCD1 | OUT | These are the segment signal output terminals to the LCD panel. Using the matrix of COMON 1 and COMON 2, up to a maximum of 46 dots can be display. The data output format will use PLA for the numerical figures. Symbols and letters data will be directly output from the data memory (RAM). |
| 5 6 | COM2 COM1 | OUT | These are the common signal output terminals to the LCD panel. The three values of GND, 1/2VDD, and VDD (5ms intervals) will be output in 50 Hz cycles. The segment that registers and VDD voltage differential between these terminals and LCD 1-LCD 23, will light up. |
| 7 33 | VDD VDD | | These are the power supply terminals for the device, supplying a voltage of $5V \pm 10\%$ when the device is operating. The voltage can be lowered to 2.5V when the internal data memory (RAM) is to be maintained (carry out CKSTP command). The device will be receipt when a voltage of zero -4.5V is supplied to this terminal, and a program will start from address 0. NOTE: Since pin 7 and pin 33 are connected together inside the device it is sufficient to supply the power voltage to one of these terminals. |
| 8 | FM | IN | This accepts the VCO output from $10 \sim 155$ MHz (0.5 Vp-p MIN). This is divided down by 1/2 inside the device by using the pulse swallow method. It also features a built-in AC amplifier, and therefore the DC components should be removed from the signal by using a capacitor first before entering the signal into the device. |
| 9 | AM | IN | This accepts the VOC output from $0.5 \sim 50$ MHz (0.3 Vp-p MIN). This is selected and goes active when the direct dividing method is used. It also features a built-in AC amplifier, and therefore the DC components should be removed from the signal by using a capacitor first before entering the signal into the device. |
| 10 | GND | | GND Terminal |
| 11 12 | EO1 EO2 | OUT | This is the charge pump output from the phase detector that forms the PLL. When the divided oscillation frequency is higher than the reference frequency, these terminals will output a high level signal. When the divided oscillation frequency is lower than the reference frequency, these terminals will output a low level signal. Since the same signal will be output from both EO1 and EO2, either terminal can be selected as desired. |
| 13 | CE | IN | This is the device select signal input terminal. This terminal should be set to high level when the device is to be operated normally, and set to low level when the device will not be used. However it will not accept an input under $135 \mu s$. |
| 14 | NC | | |
| 15 16 | XI XO | IN | This the quartz oscillator connection terminal to which is connected a 4.5 MHz quartz oscillator. Adjust the oscillation frequency (4.5 MHz) by monitoring terminal XO. |
| 17 | SD | IN | During auto tuning and SDK search, this input terminal detects whether a broadcast station has been received or not. It will stop the tuning when a high level input is received. (Read in SDK S T P and AND for SDK search) However, an input must be received within 45ms after the PLL has locked. (Within 75ms for LW reception) |
| 18 19 | FM/MW LW | OUT | This is the FM/MW/LW select signal which is output from the device. |
| 20 | LOC/DX | OUT | This is the LOC/DX select signal which is output from the device. A high level signal will be output for the LOC mode. |
| 21 24 | K3 K0 | IN | These are the key return signal input terminals for an external key matrix. |
| 25 28 | PB3 PB0 | OUT | These are the key return signal source terminals, set to active high. The external diodes an be deleted. |
| 29 30 | PC3 PC2 | | |
| 31 | SDK | OUT | High level signals from the device are output to this terminal for the SDK mode (Traffic information etc.). |
| 32 | MUTE | OUT | This muting output terminal, set to active low, eliminates the shock noise when the PLL bck is disengaged. |

PIONEER

Service Manual

REPAIR & ADJUSTMENTS



The photo shows the model KEH-9300SDK

ORDER NO.
CRT-387-0

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-9300SDK ^{WG}
KEH-9300 ^{EW}

CASSETTE CAR STEREO WITH FM/AM ELECTRONIC TUNER

KEH-9000 ^{ES}

- For the circuit and mechanism descriptions, please refer to the service manual (CRT-398).
- 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

EK © DEC. 1983 Printed in Japan

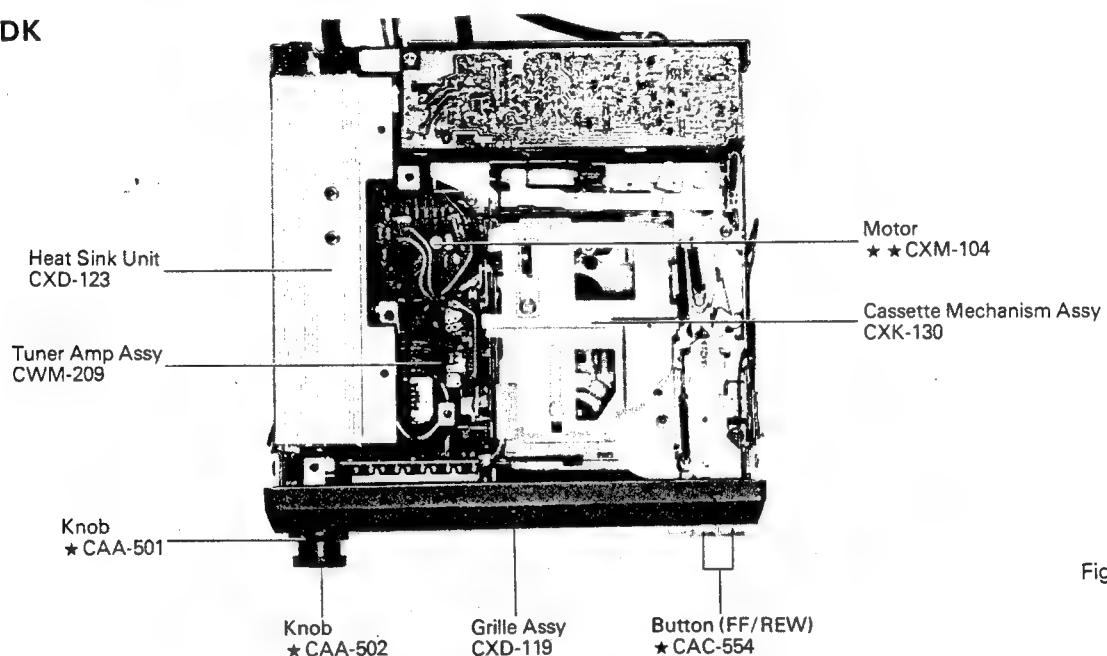
- Cassette Mechanism Unit
See the Service Manual CX-146/C (CRT-324) when servicing the cassette mechanism unit.
The differences from the CX-146/C are shown below.

Exploded View (Page 14)

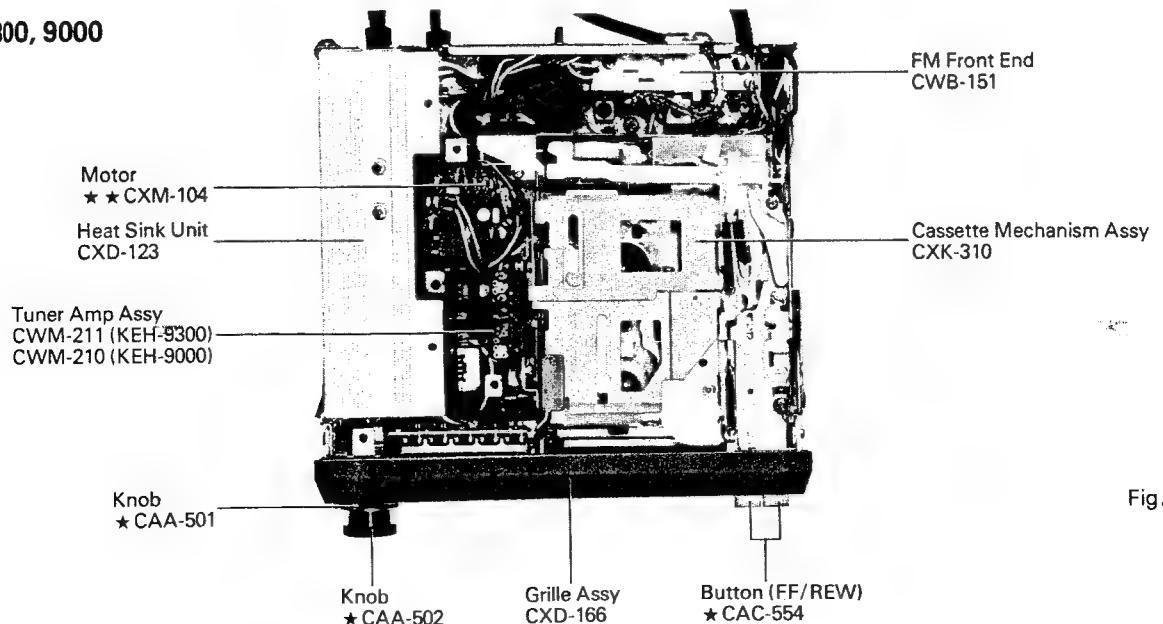
| CX-146/C | | | | KEH-9300SDK, 9300, 9000 | |
|----------|-----|----------|-------------|-------------------------|-------------|
| Mark | No. | Part No. | Description | Part No. | Description |
| ★ ★ | 38. | CNL-286 | P.C. Board | CNP-925 | P.C. Board |
| | 41. | CPB-102 | Head | CPB-066 or CPB-356 | Head |

1. PARTS LOCATION

• KEH-9300SDK



• KEH-9300, 9000



2. DISASSEMBLY

• Removing the Case Unit

1. Remove the six screws and then take off the case unit.

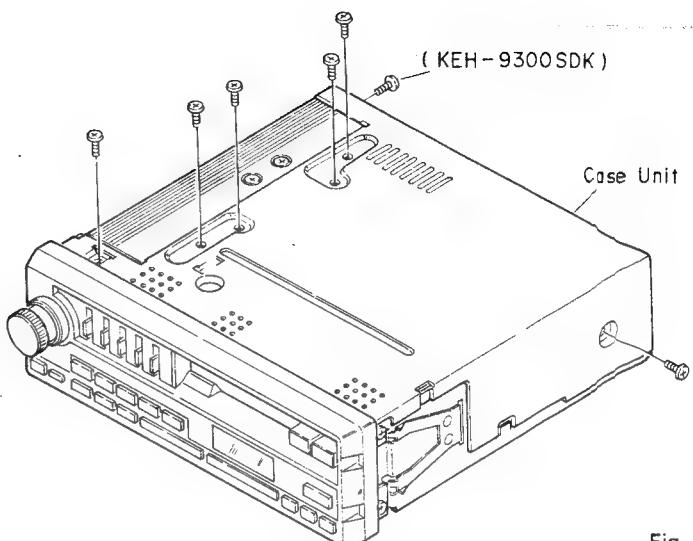


Fig. 3

• Removing the Grille Assy

1. Remove the two knobs.
2. Remove the four screws and remove grille assy.

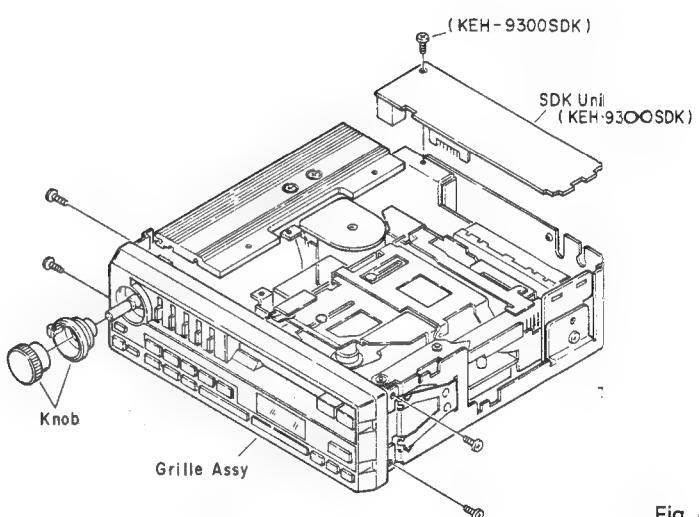


Fig. 4

• Removing the Cassette Mechanism Assy

1. Remove the screw and then take off the SDK Unit.
(Shown in Fig. 4 KEH-9300SDK)
2. Remove the three screws and remove cassette mechanism assy.

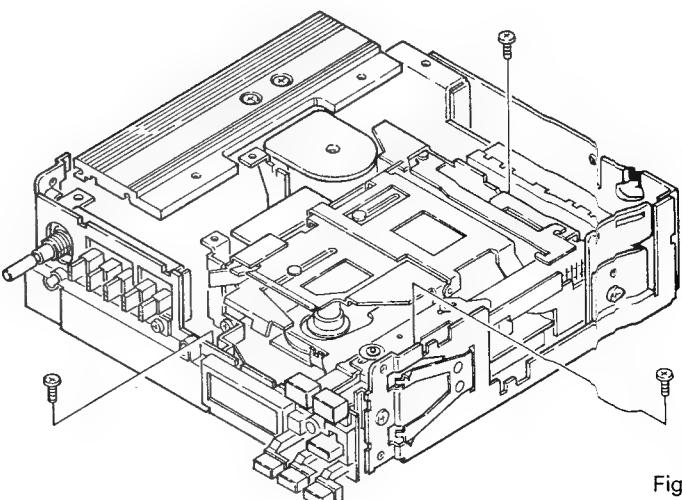


Fig. 5

3. ADJUSTMENT

3.1 DOLBY NR LEVEL ADJUSTMENT

- Connection Diagram

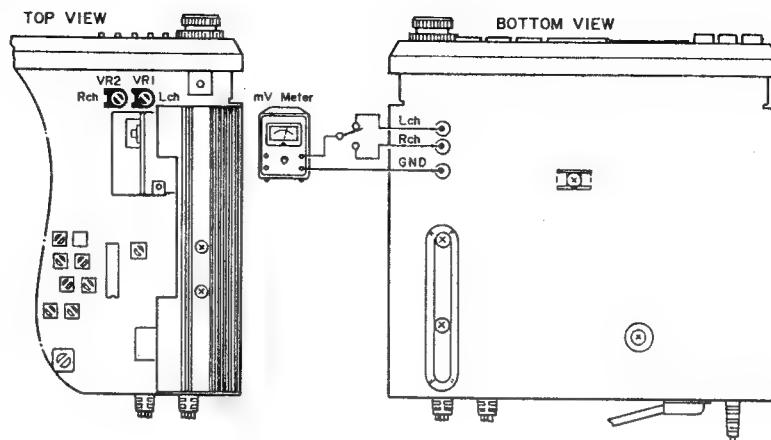


Fig. 6

- To Adjust

1. Set the Dolby NR switch to OFF.
2. Playback the Dolby NR level calibration tape CT-150 (400 Hz, 200 nwb/m) and adjust VR1 (L ch), VR2 (R ch) so that the mV meter shows $300\text{mV} \pm 1\text{dB}$. ($300\text{mV} = -8.24\text{dBs}$)

3.2 DECODER ADJUSTMENT

- Connection Diagram

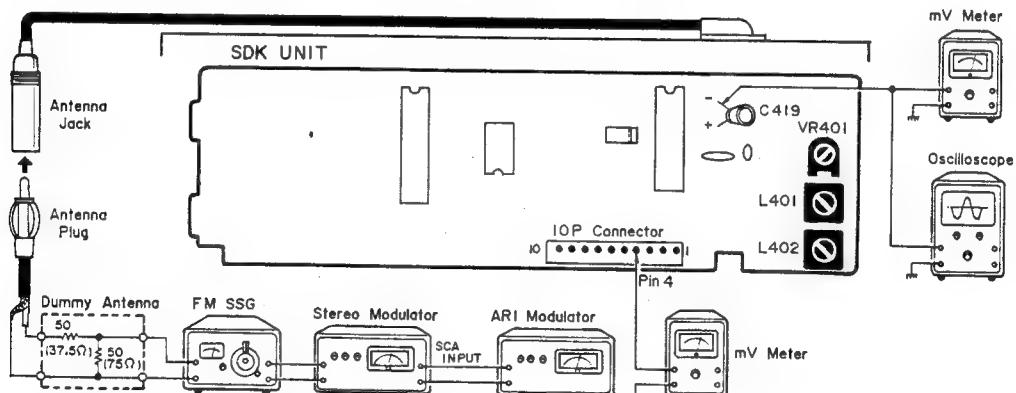


Fig. 7

- To Adjust

1. Set the FM SSG as follows:
Carrier: 98 MHz
Modulation (audio): 400 Hz, 60%
Modulation (SK) 57 kHz, 5%
2. Adjust the output of SSG so that the amplitude of indi-

cator of mV meter connected to the terminal No. 4 becomes $2.75\text{mV} \sim 3\text{mV}$.

3. Adjust L401 and L402 so that the amplitude of indicator of mV meter connected to C419 becomes maximum.
4. Adjust VR401 so that SDK lamp lights on.

3.3 FM IF ADJUSTMENT

- Connection Diagram

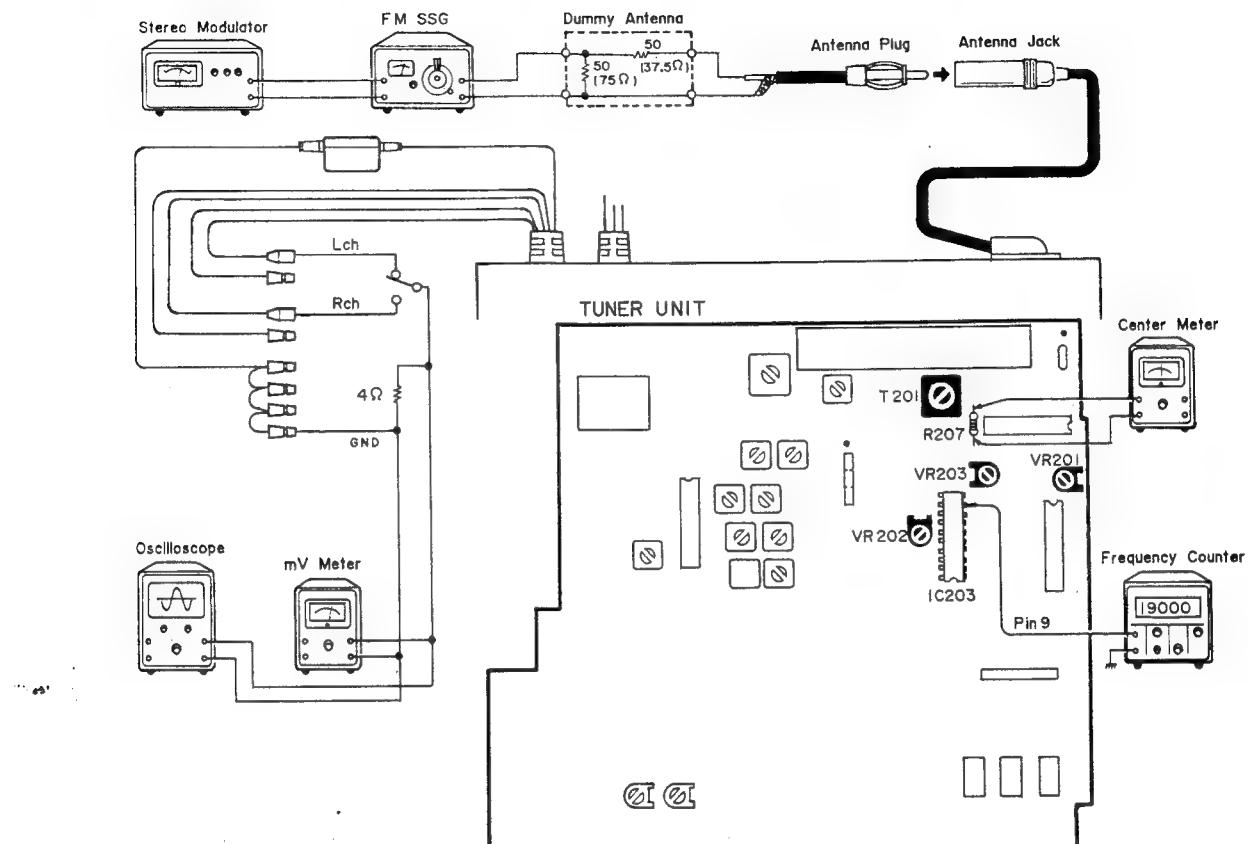


Fig. 8

- To Adjust

1. Set the Mono switch to MONO.
2. Apply a signal of 98MHz, 400Hz 30% modulation and 60dB (μ V) from the FM SSG and tune 98MHz.
3. Adjust T201 to make the center meter show 0.

3.5 SEPARATION ADJUSTMENT

- Connection Diagram (Show in Fig. 8)

- To Adjust

1. Apply a signal of 98MHz, 1kHz 90% modulation and 19kHz 10% modulation and 60dB (μ V) from the FM SSG. Tune into a frequency of 98MHz.
2. Adjust VR202 to obtain the best separation.
(At this time VR201 is turned in a counterclockwise direction.)

3.4 FM MPX ADJUSTMENT

- Connection Diagram (Show in Fig. 8)

- To Adjust

1. Apply an unmodulated signal of 98MHz and 60dB (μ V) from the FM SSG. Tune into a frequency of 98MHz.
2. Adjust VR203 to make frequency counter show 19kHz \pm 30Hz.

3.6 FM ARC ADJUSTMENT

- Connection Diagram (Show in Fig. 8)

- To Adjust

1. Set the Mono switch to AUTO.
2. Apply a signal of 98MHz, 1kHz 90% modulation and 19kHz 10% modulation and 35dB (μ V) from the FM SSG. Tune into a frequency of 98MHz.
3. Adjust VR201 to obtain a 5dB separation.

3.7 FM TRACKING ADJUSTMENT

- Connection Diagram

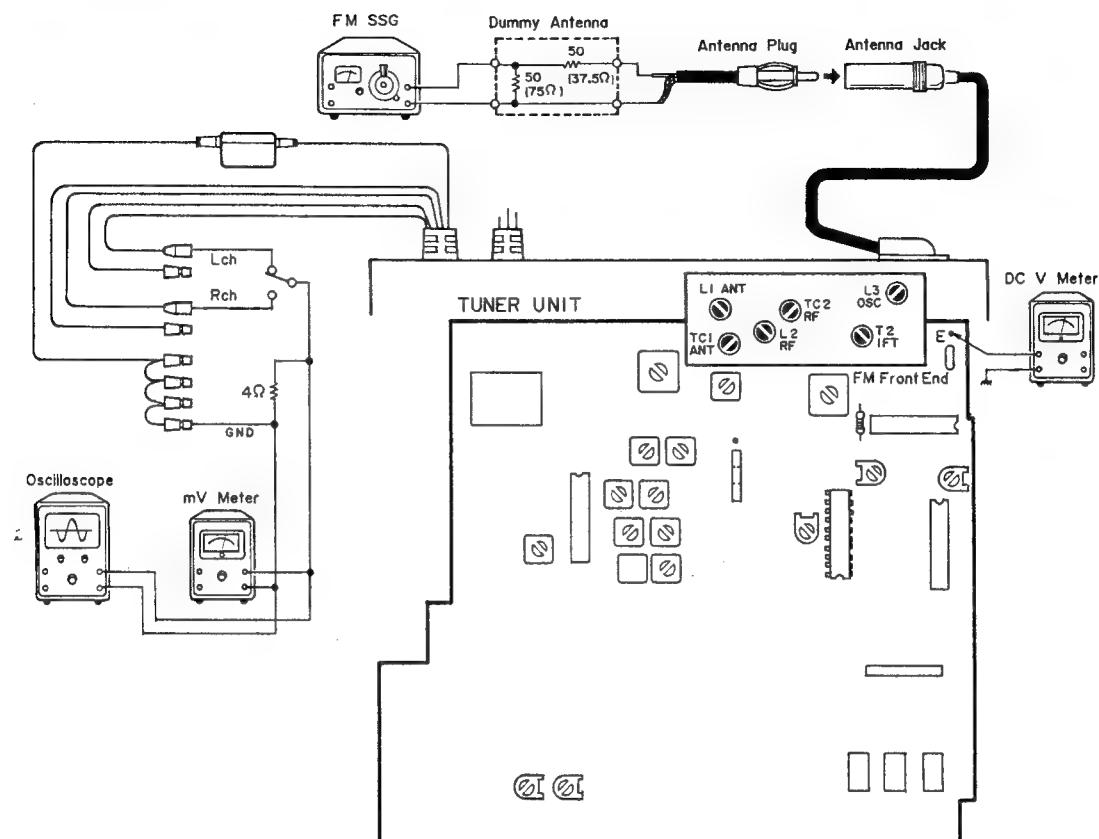


Fig. 9

- To Adjust

| Frequency of FM SSG | Displayed Frequency | Adjusting Point | DC V Meter | mV Meter |
|--|---------------------|-----------------|--------------------------|----------------|
| 1. | 108 MHz | L3 | 8.5 ± 0.2 V | |
| 2. | 87.5 MHz | | 2.2 ± 0.6 V check | |
| 3. 90 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μ V) | 90 MHz | L1, L2 | | Maximum output |
| 4. 106 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μ V) | 106 MHz | TC1, TC2 | | Maximum output |
| 5. Repeat steps (3) and (4) alternately so that the mV meter indicates maximum output. | | | | |
| 6. 98 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μ V) | 98 MHz | T2 | | Maximum output |

3.8 AM IF ADJUSTMENT

- **Connection Diagram**

IF Generator Scope

Sweep center frequency 450kHz

Input gain 0.3Vp-p/cm

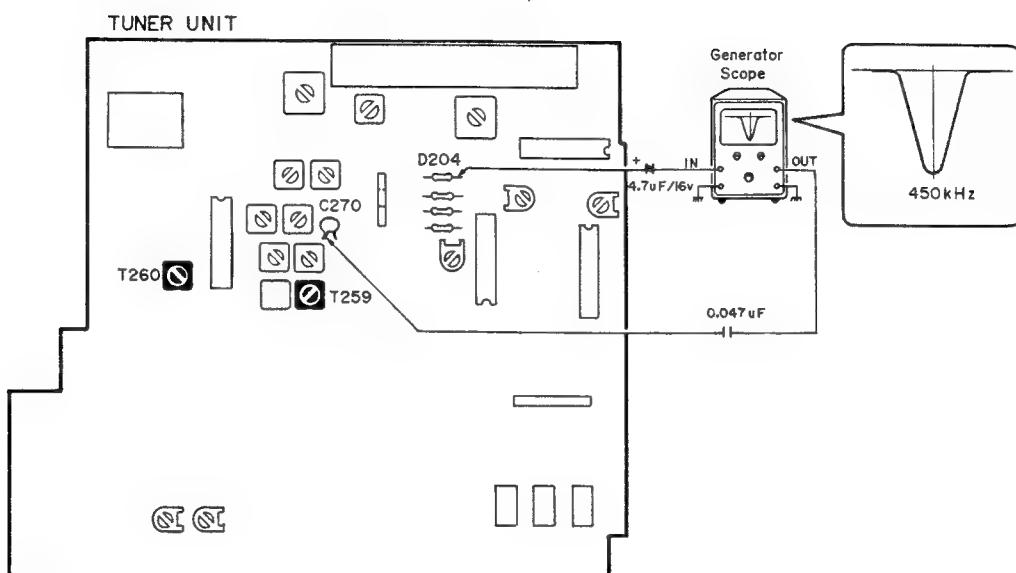


Fig. 10

- **To Adjust**

1. Apply minimum output signal required to check generator scope U curve and adjust T259 and T260 so that curve amplitude is at maximum point and there is optimum symmetry.

3.9 AM TRACKING ADJUSTMENT

- Connection Diagram

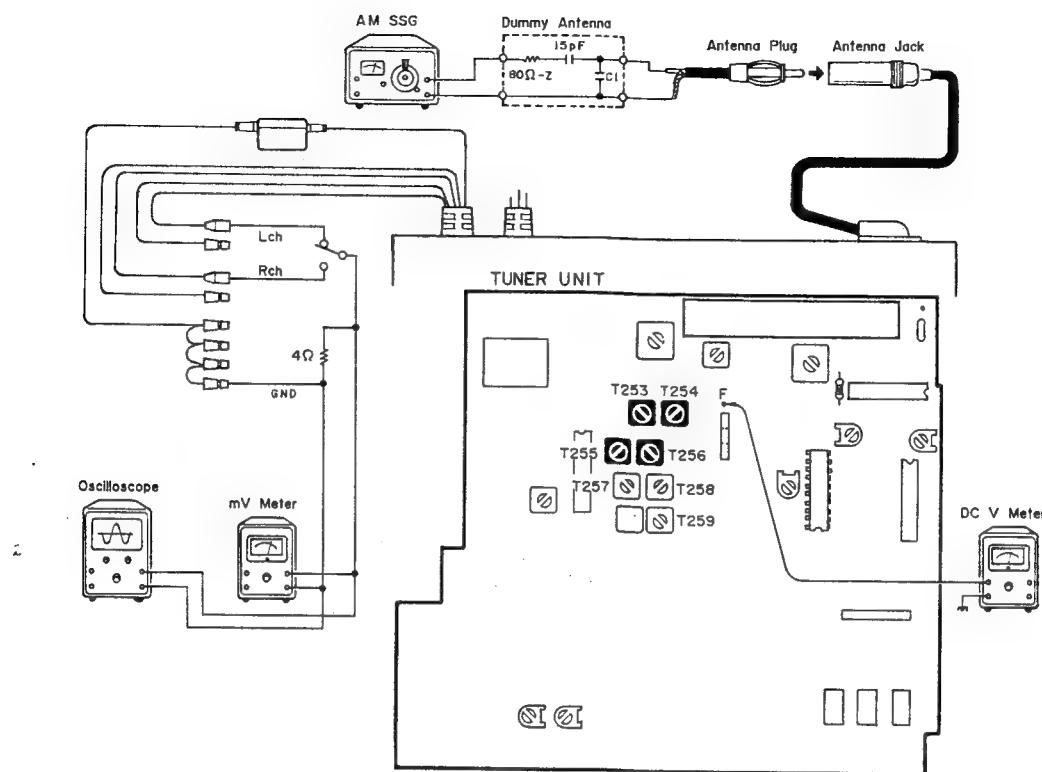


Fig.11

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of the SSG.

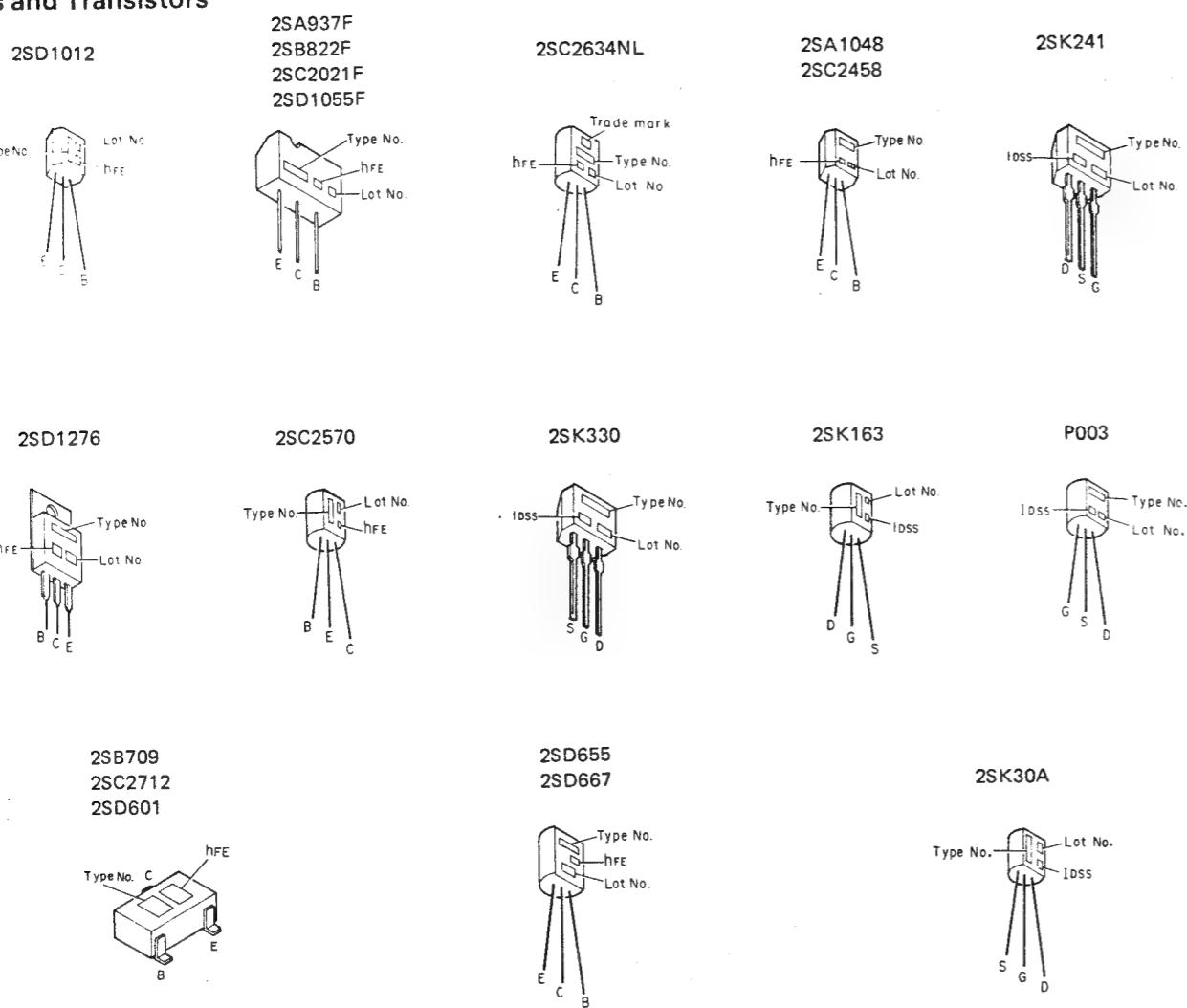
- To Adjust (In case of MW)

| Frequency of AM SSG | Displayed Frequency | Adjusting Point | DC V Meter | mV Meter |
|--|---------------------|-----------------------|----------------|----------------|
| 1. | 531 kHz | For Confirmation Only | More than 0.8V | |
| 2. 603 kHz (400 Hz, 30% modulation) output level 25 dB (μ V) | 603 kHz | T253, T255 | | Maximum output |
| 3. | 1,602 kHz | For Confirmation Only | More than 8.5V | |

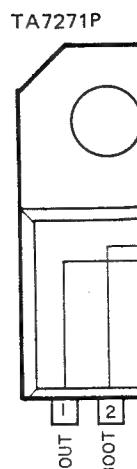
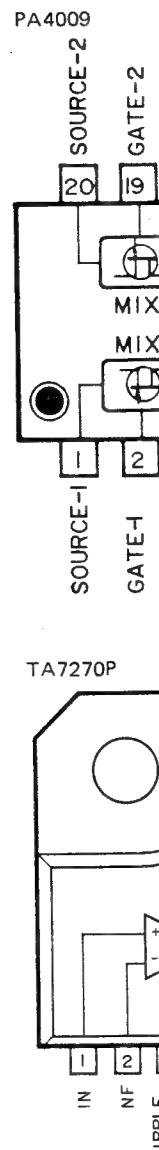
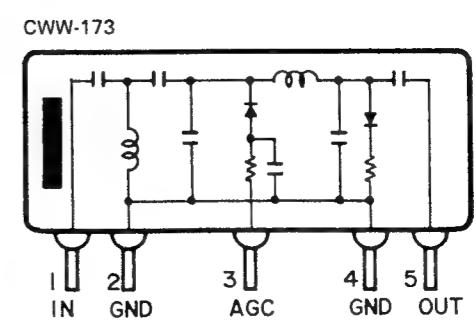
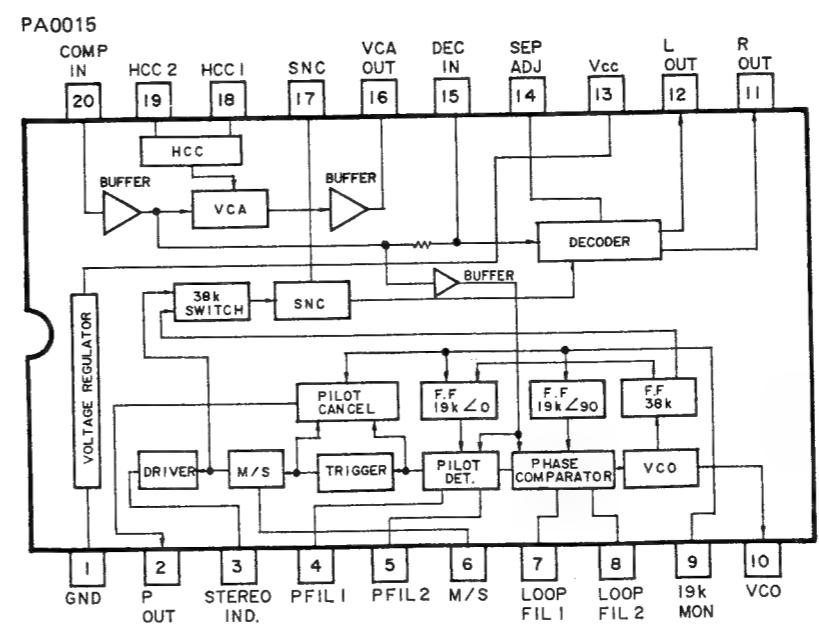
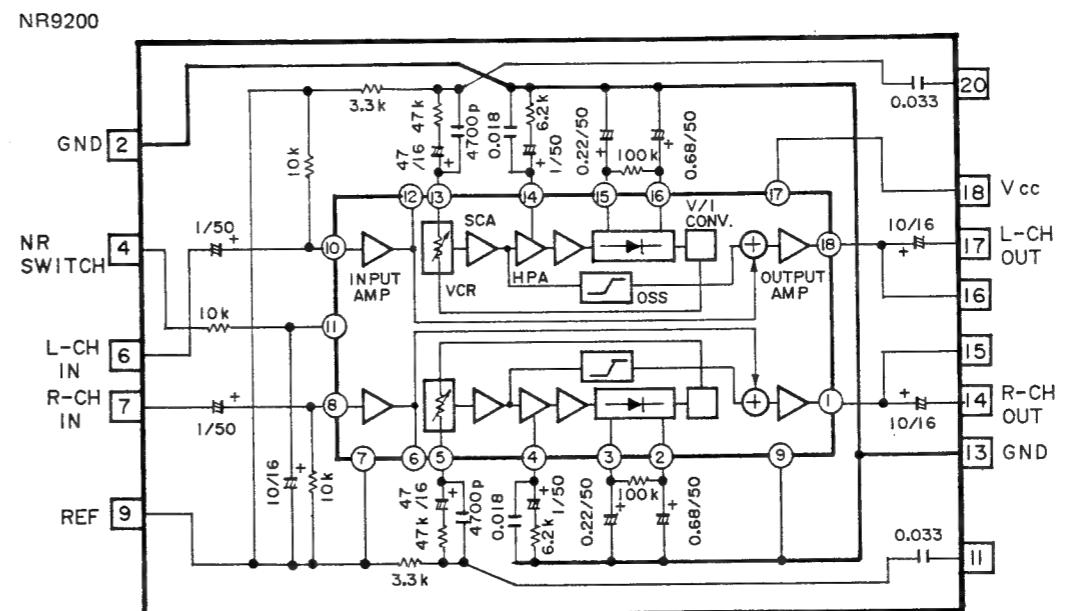
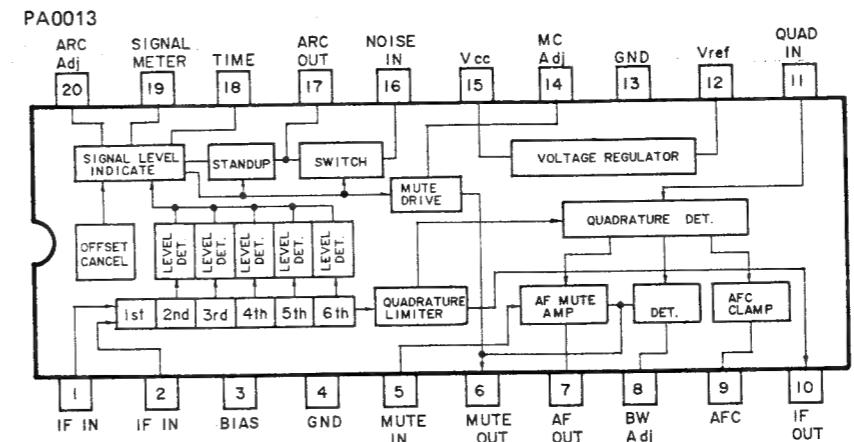
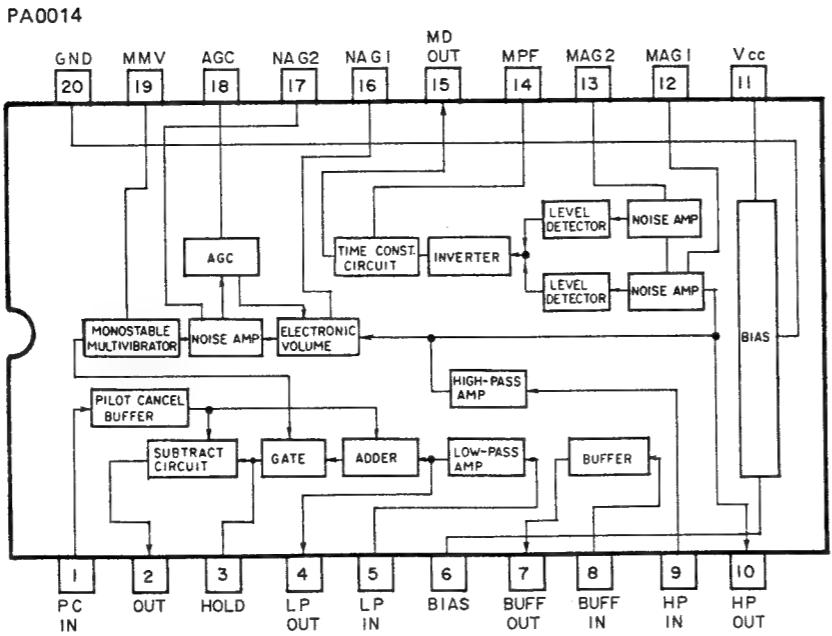
- To Adjust (In case of LW.....KEH-9300SDK, 9300)

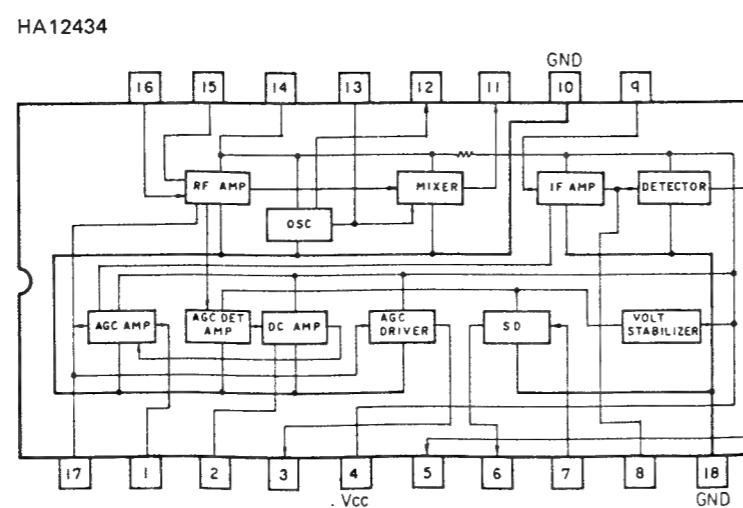
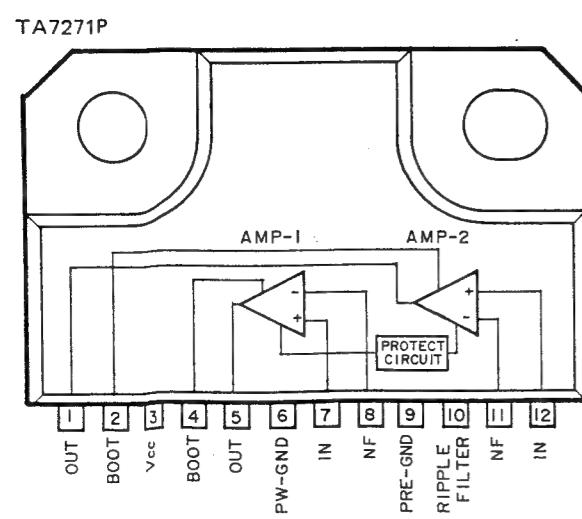
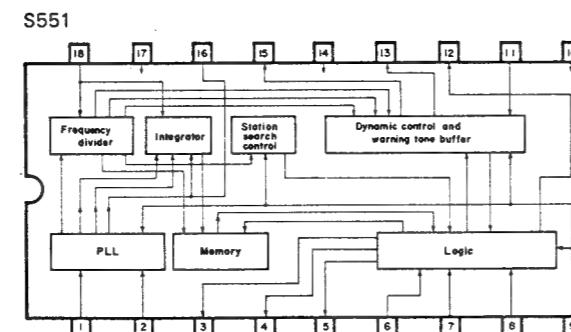
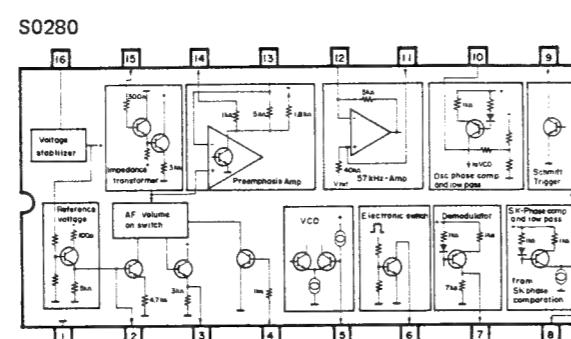
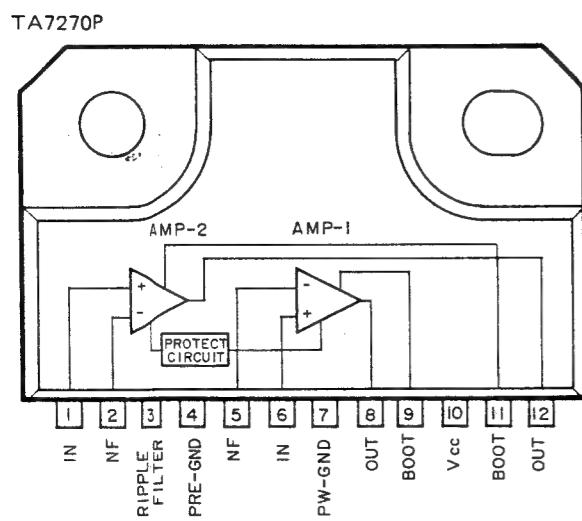
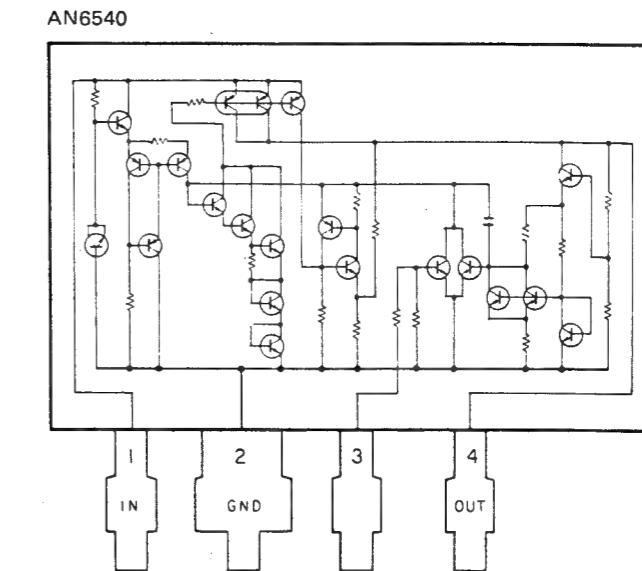
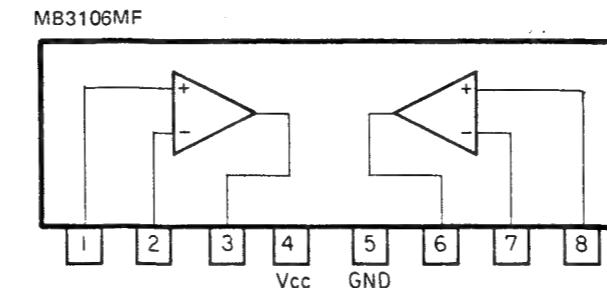
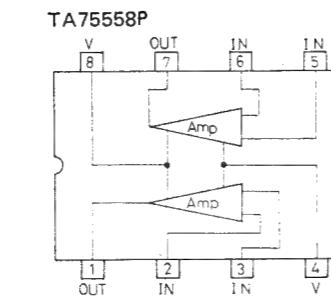
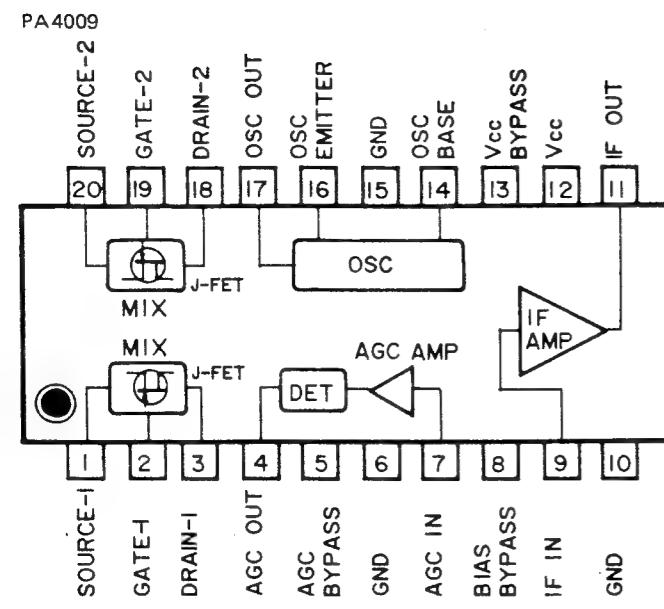
| Frequency of AM SSG | Displayed Frequency | Adjusting Point | DC V Meter | mV Meter |
|--|---------------------|-----------------------|----------------|----------------|
| 1. | 153 kHz | For Confirmation Only | More than 2.5V | |
| 2. 218 kHz (400 Hz, 30% modulation) output level 25 dB (μ V) | 218 kHz | T254, T256 | | Maximum output |
| 3. | 281 kHz | For Confirmation Only | More than 8.5V | |

• IC's and Transistors

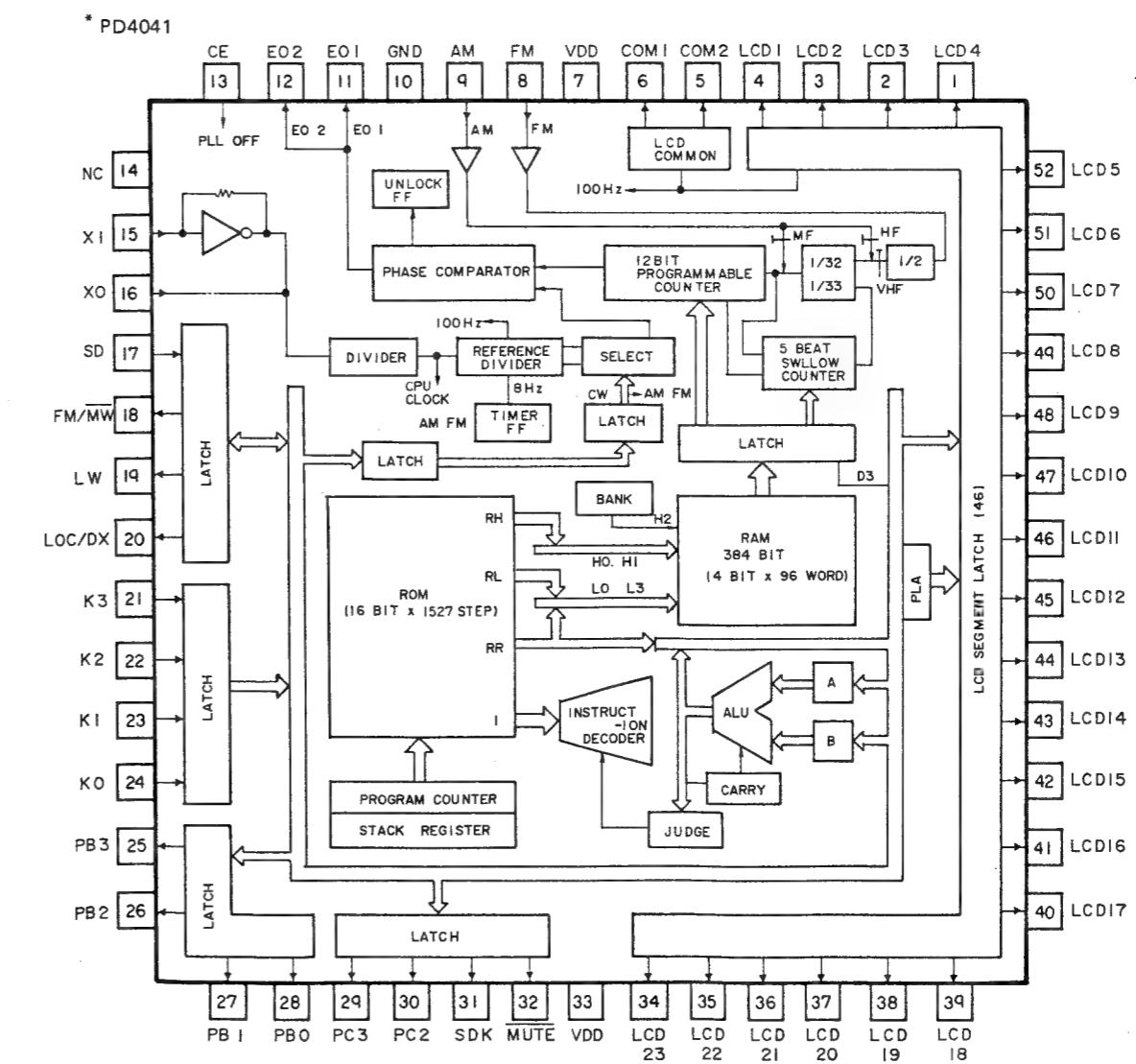


| Part No. | Indication (Type No., hFE) |
|------------|-------------------------------|
| 2SB709-AQ | AQ |
| 2SB709-AR | AR |
| 2SB709-AS | AS |
| 2SC2712-LG | LG |
| 2SC2712-LL | LL |
| 2SC2712-LY | LY |
| 2SD601-YQ | YQ |
| 2SD601-YR | YR |
| 2SD601-YS | YS |

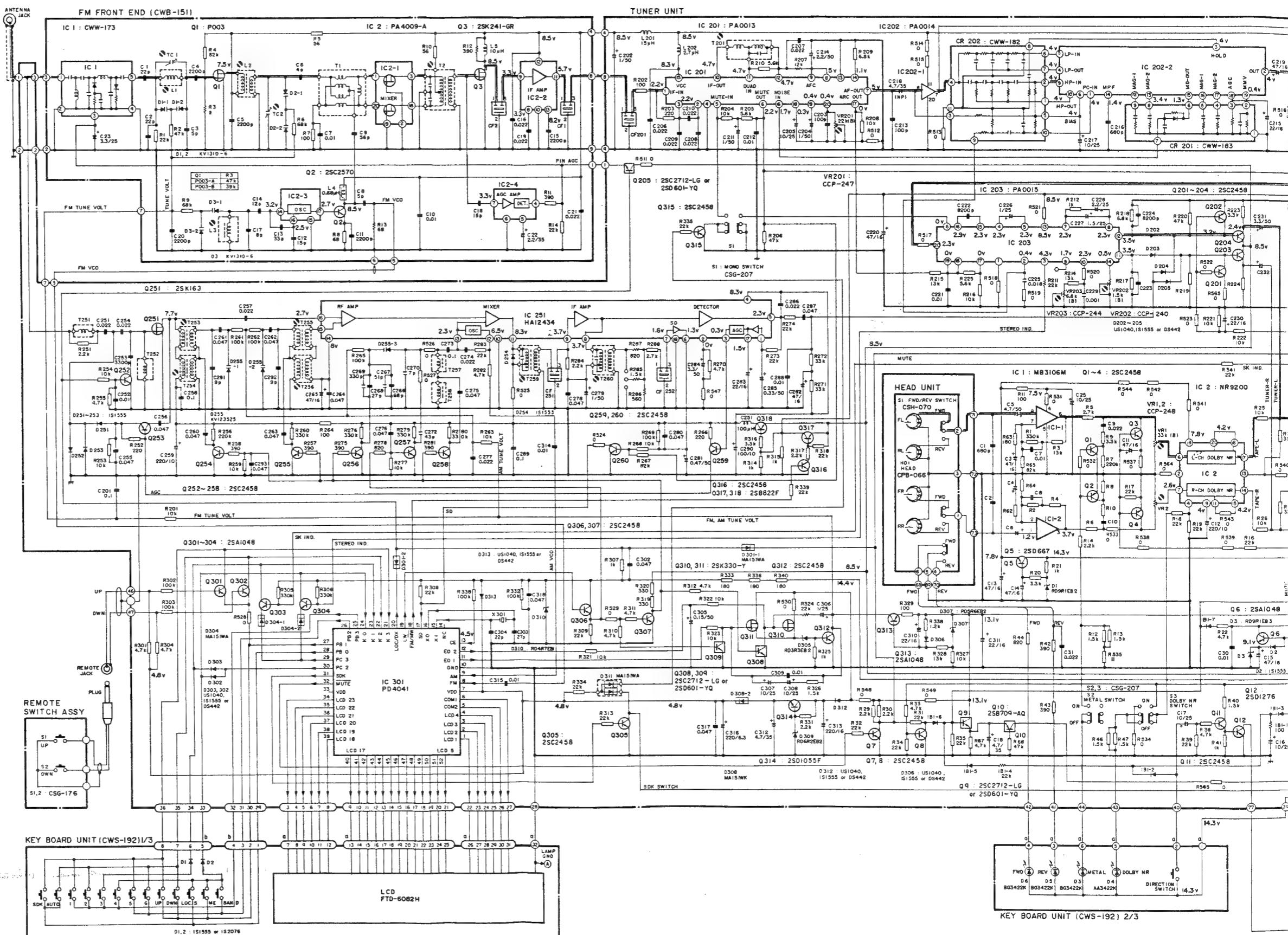




IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.



4. SCHEMATIC CIRCUIT DIAGRAM (KEH-9300SDK)



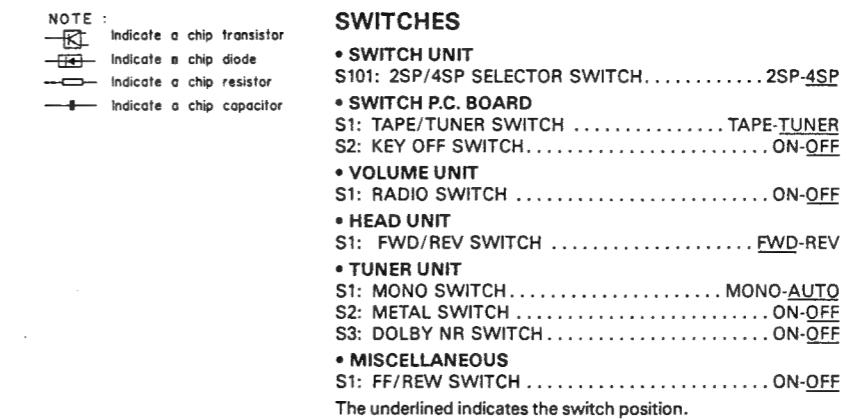
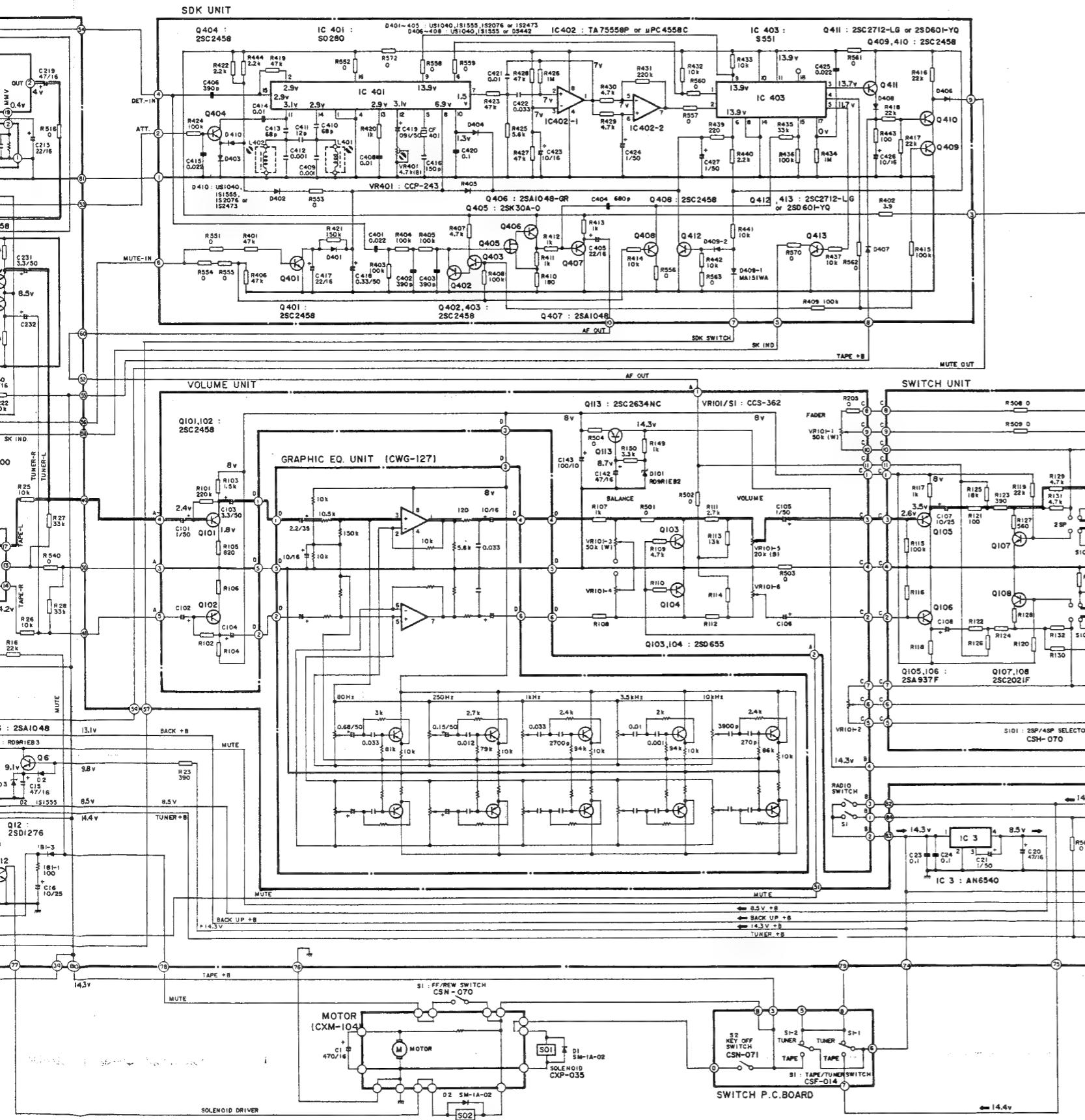
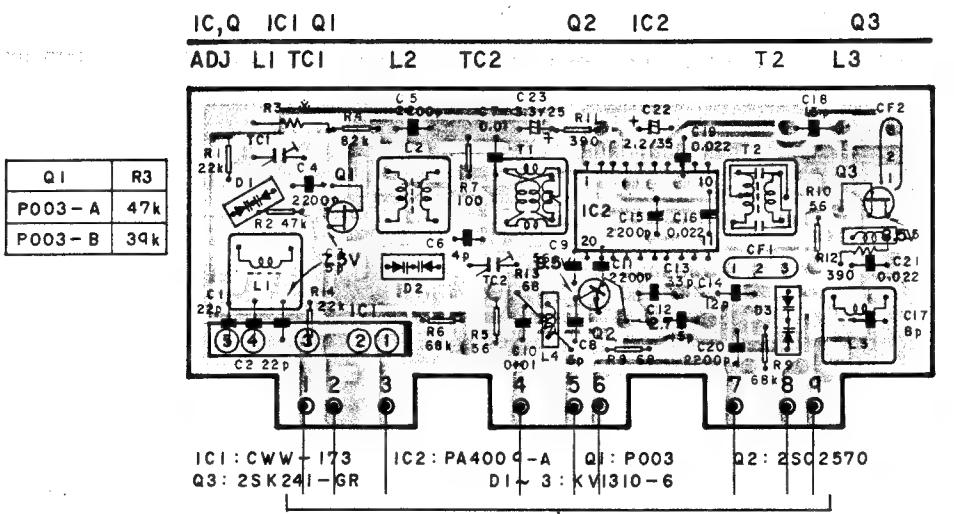


Fig. 12

5. CONNECTION DIAGRAM (KEH-9300SDK)

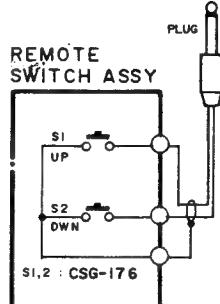
FM FRONT END (CWB-151)



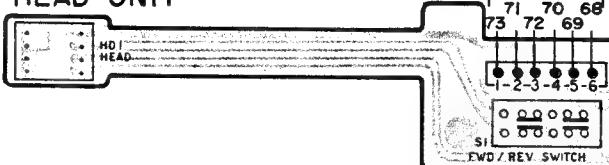
FM FRONT END (CWB-151)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------|----|----|----|----|----|-----|-----|-----|----|----|
| IC 2 | / | 0 | | | 0 | 3.3 | 3.3 | 3.3 | 0 | |
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

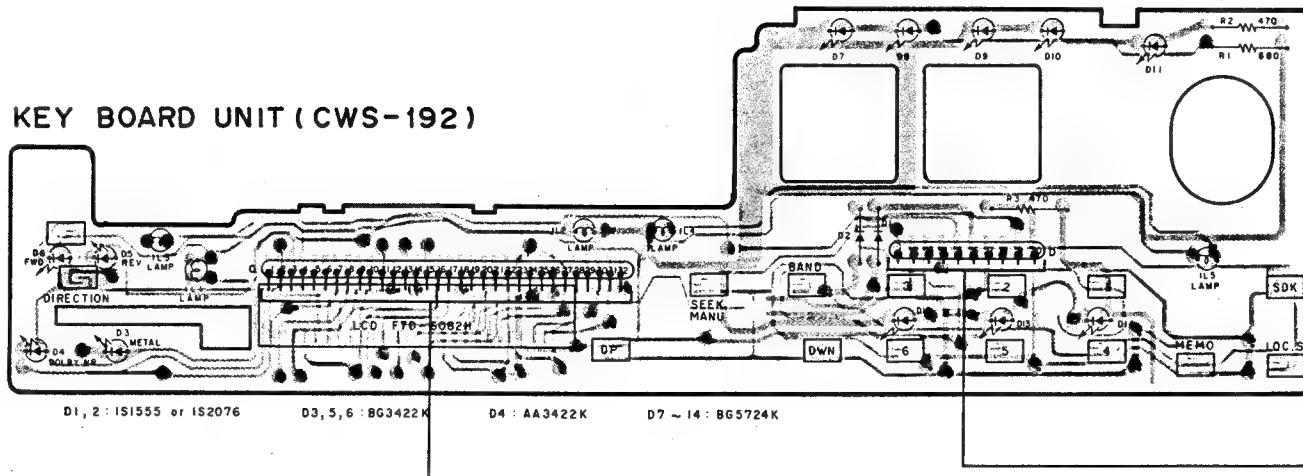
(V)



HEAD UNIT



KEY BOARD UNIT (CWS-192)



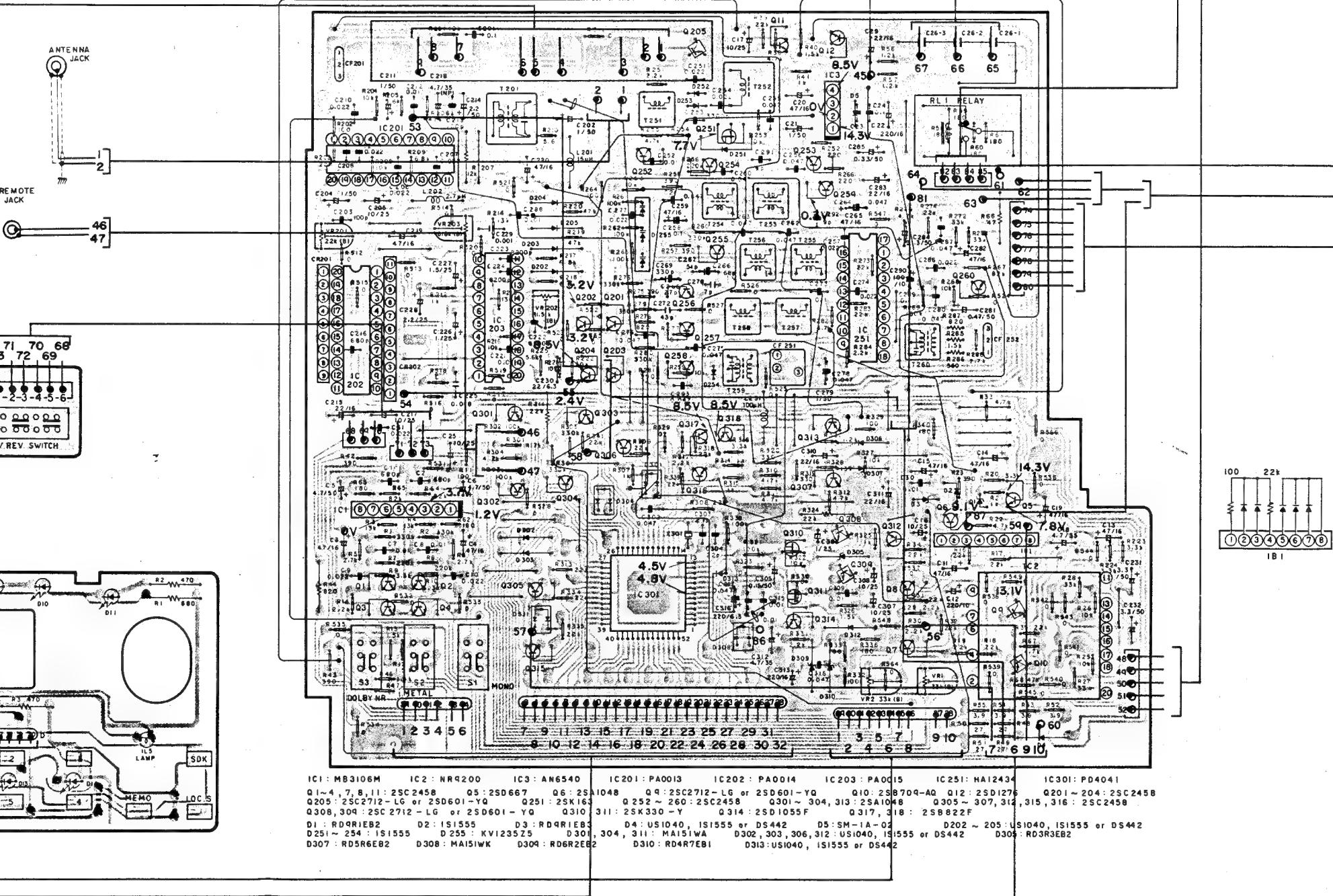
TUNER UNIT

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| IC201 | 2.2 | / | 2.2 | 0 | | 2.2 | 5.0 | 5.0 | 5.0 | 4.7 | 4.7 | 4.7 | 0 | 1.1 | 8.3 | 1.7 | 0 | 0.3 | 0.4 | 0.4 |
| IC202 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | / | | 4.0 | 4.0 | | | 3.4 | 1.4 | 1.3 | 0 | 0 | 0 | 0.4 | 0 |
| IC203 | / | 0.4 | 4.3 | 2.3 | 2.3 | 0 | 2.3 | 2.3 | 1.7 | 2.3 | 3.5 | 3.5 | 6.5 | 0.5 | 2.3 | 2.9 | 0 | 0 | 0 | 2.3 |
| IC251 | / | 0 | 0.3 | 8.3 | 2.3 | 1.3 | 1.6 | 3.7 | 3.7 | 8.3 | 6.5 | 2.3 | 8.0 | | 2.7 | 1.5 | 0 | | | |
| IC 2 | | | | | | | 2.6 | 4.0 | | | | | 4.2 | 4.2 | | 7.8 | 4.2 | | | |

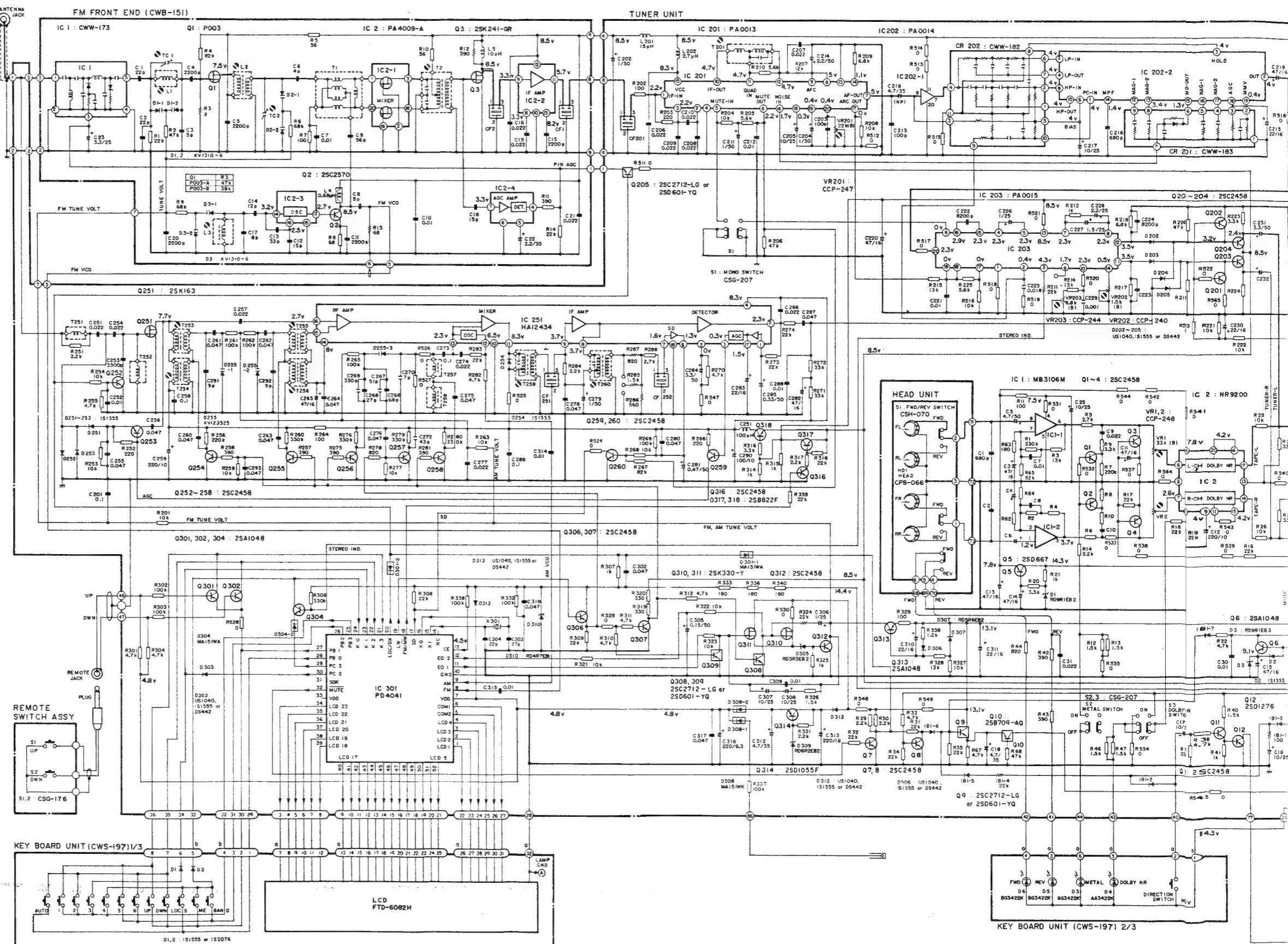
TUNER UNIT

| | | | | |
|-------|-------|-------|-------|----------------------|
| Q301 | Q202 | Q201 | Q205 | Q254 |
| IC201 | IC1 | Q304 | Q204 | Q255 |
| IC, Q | IC202 | Q1 Q3 | Q2 Q4 | Q12 Q3 |
| | | IC203 | Q305 | Q308 Q309 |
| | | Q315 | Q303 | Q317 Q257 |
| | | Q306 | IC301 | Q313 IC251 |
| | | | Q258 | Q314 Q311 Q313 IC251 |
| | | | Q312 | Q8 Q7 Q6 Q260 |
| | | | | Q9 Q10 Q5 IC2 |

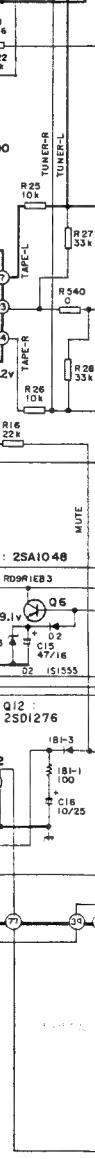
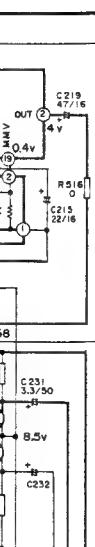
ADJ VR201 VR203 T201 VR202 T256 T254 T253 T255 VR2 T260 VR1



6. SCHEMATIC CIRCUIT DIAGRAM (KEH-9300)



A



SWITCHES

- SWITCH UNIT
S101: 2SP/4SP SELECTOR SWITCH.....2SP-4SP
- SWITCH P.C. BOARD
S1: TAPE/TUNER SWITCH TAPE-TUNER
S2: KEY OFF SWITCH ON-OFF
- VOLUME UNIT
S1: RADIO SWITCH ON-OFF
- HEAD UNIT
S1: FWD/REV SWITCH FWD-REV
- TUNER UNIT
S1: MONO SWITCH MONO-AUTO
S2: METAL SWITCH ON-OFF
S3: DOLBY NR SWITCH ON-OFF
- MISCELLANEOUS
S1: FF/REW SWITCH ON-OFF

The underlined indicates the switch position.

NOTE :
 Indicate a chip transistor
 Indicate a chip diode
 Indicate a chip resistor
 Indicate a chip capacitor

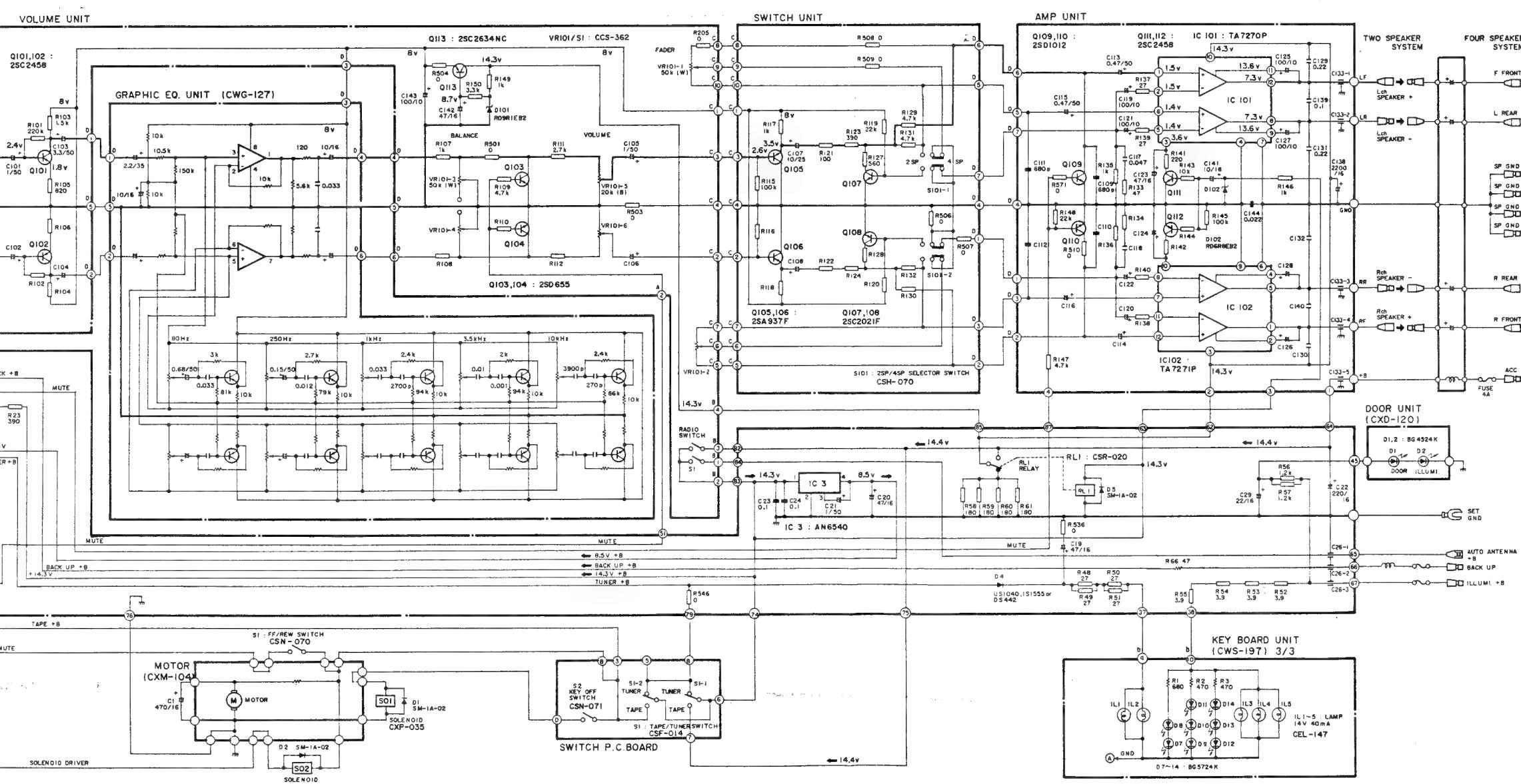


Fig. 14

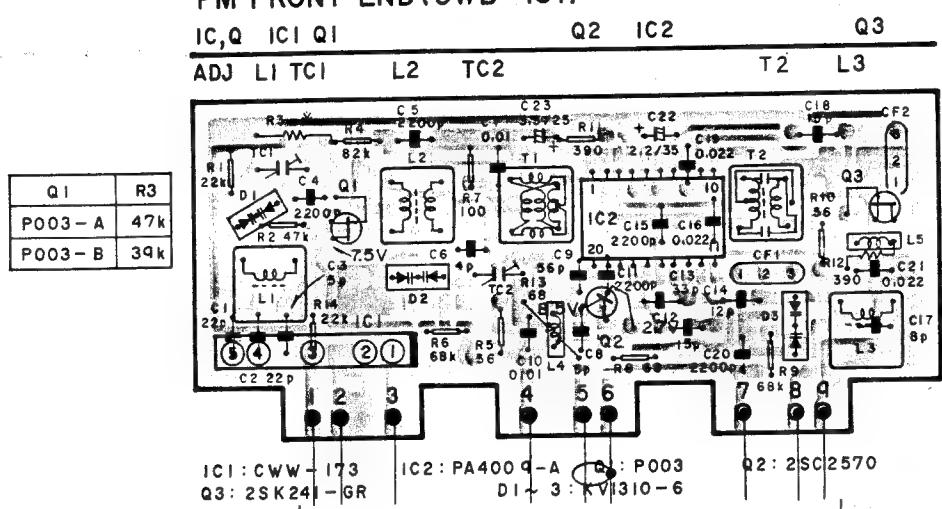
B

C

D

7. CONNECTION DIAGRAM(KEH-9300)

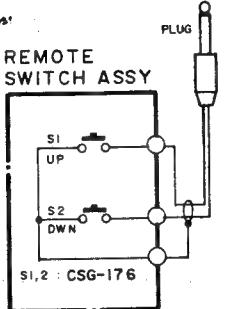
FM FRONT END (CWB-151)



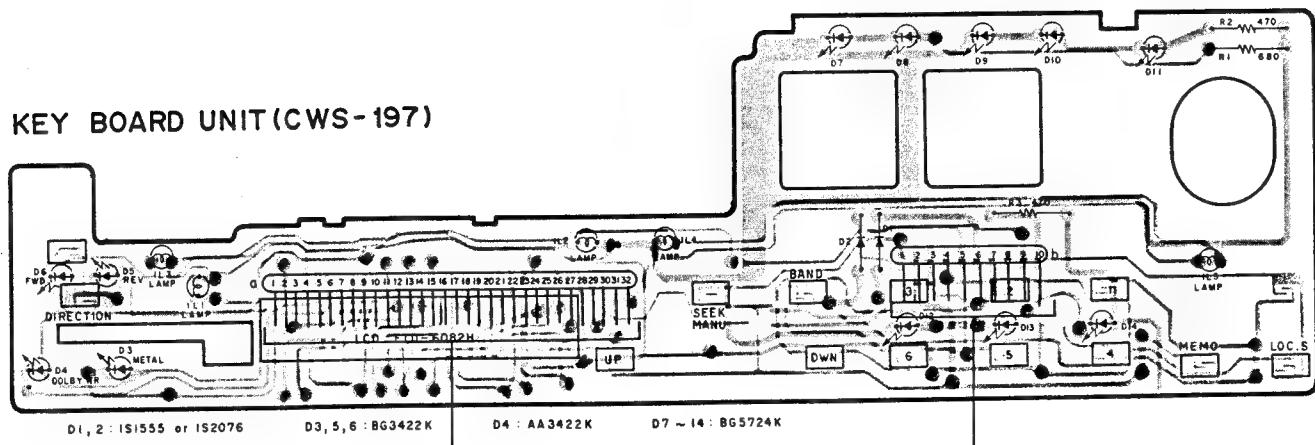
FM FRONT END (CWB-151)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----|-----|-----|-----|-----|-----|-----|-----|---|----|
| IC2 | 0 | | | 0 | 3.3 | 3.3 | 3.3 | 0 | |
| IC2 | 5.7 | 8.5 | 8.2 | 8.2 | 0 | 2.5 | 2.7 | 0 | |

(V)



KEY BOARD UNIT (CWS-197)



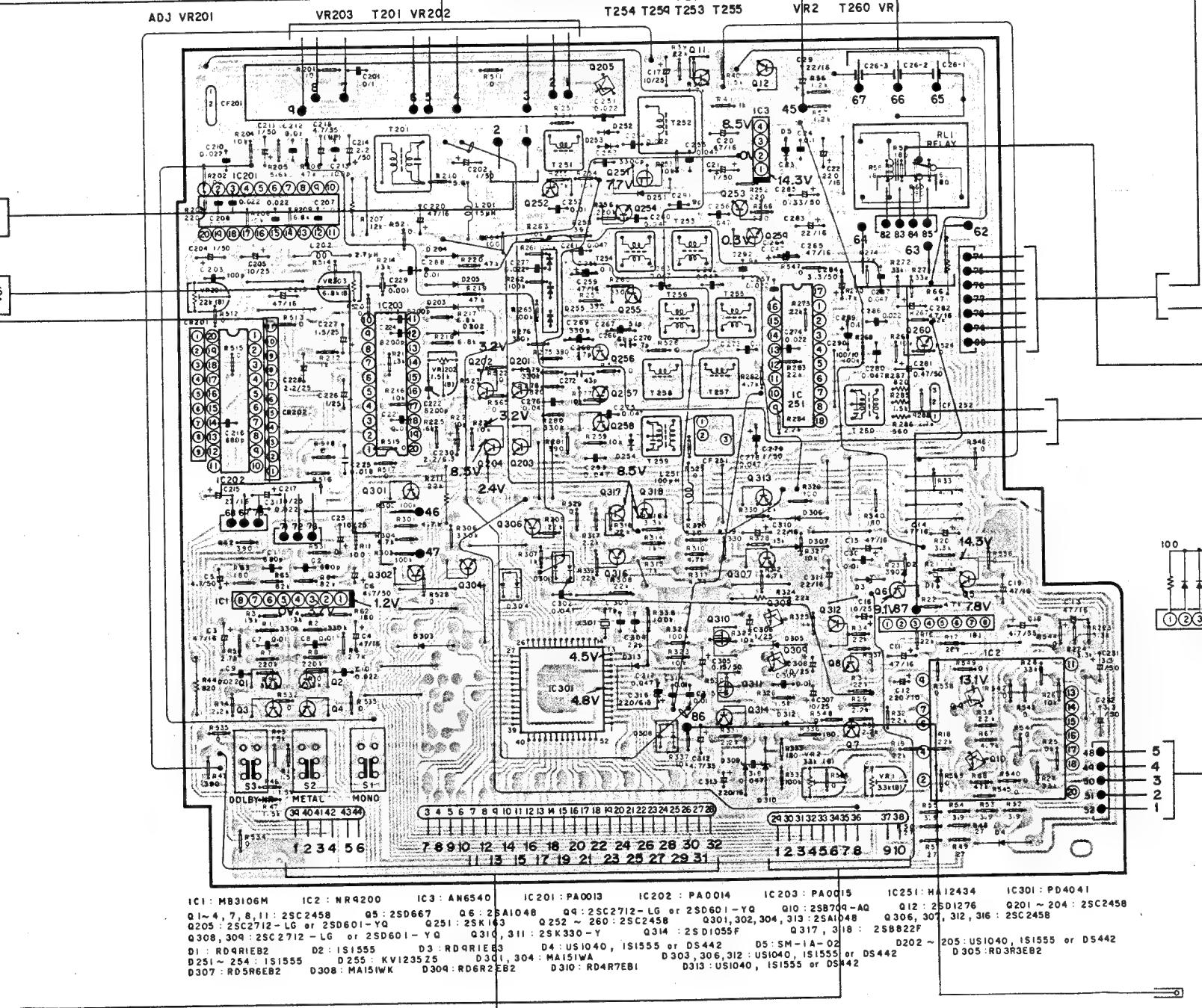
TUNER UNIT

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| IC201 | 2.2 | | | 2.2 | 0 | 2.2 | 5.0 | 5.0 | 5.0 | 4.7 | 4.7 | 4.7 | 0 | 1.1 | 8.3 | 1.7 | 0 | 0.3 | 0.4 |
| IC202 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | | 4.0 | 4.0 | | | 3.4 | 1.4 | 1.3 | 0 | 0 | 0.4 |
| IC203 | 0.4 | 4.3 | 2.3 | 2.3 | 0 | 2.3 | 2.3 | 1.7 | 2.3 | 3.5 | 3.5 | 8.5 | 0.5 | 2.3 | 2.9 | 0 | 0 | 0 | 2.3 |
| IC251 | 0 | 0.3 | 8.3 | 2.3 | 1.3 | 1.6 | 3.7 | 3.7 | | 8.3 | 6.5 | 2.3 | 8.0 | | 2.7 | 1.5 | 0 | | |
| IC2 | | | | | | 2.6 | | | 4.0 | | | | | 4.2 | 4.2 | | 7.8 | | 4.2 |

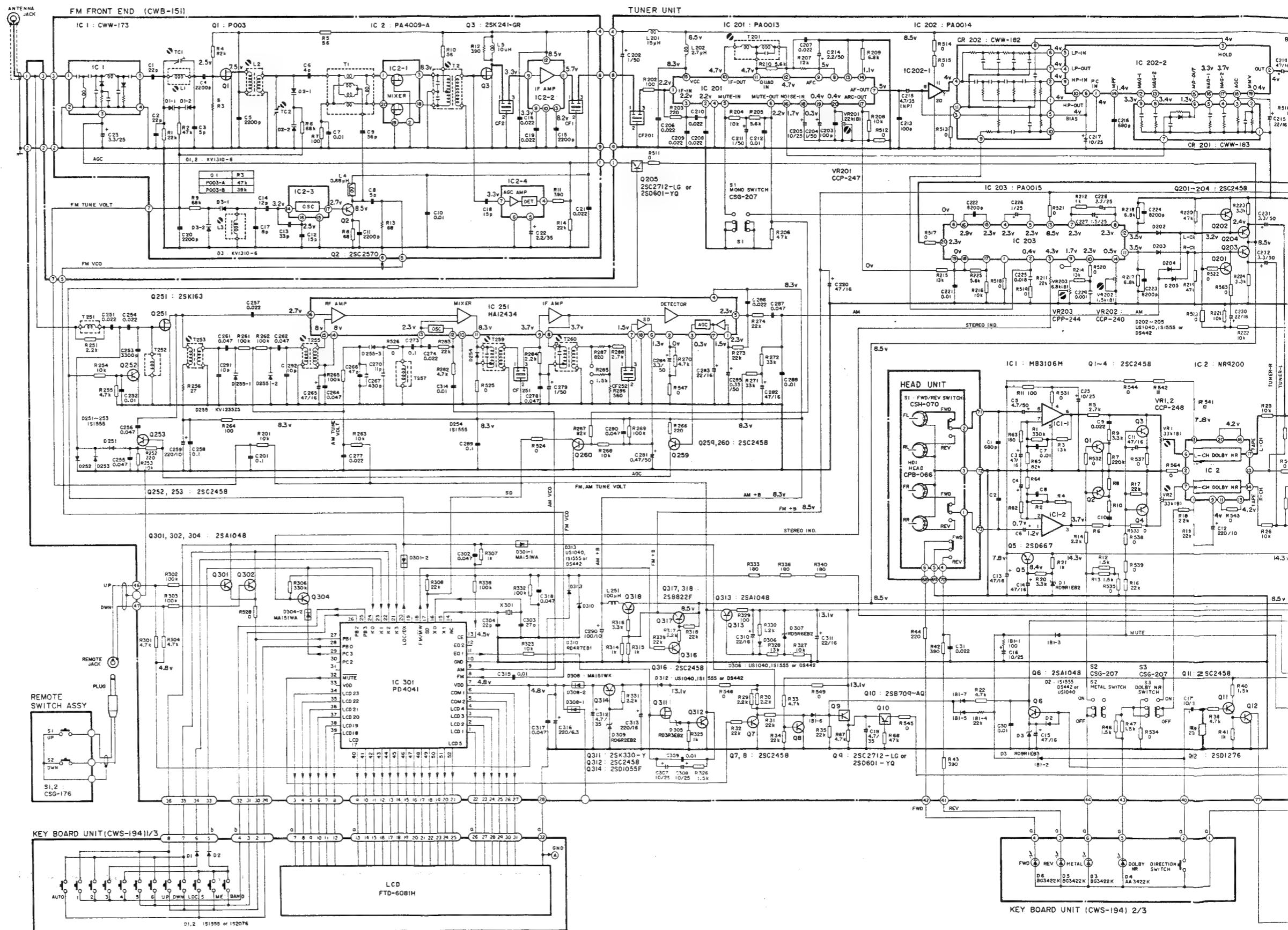
(V)

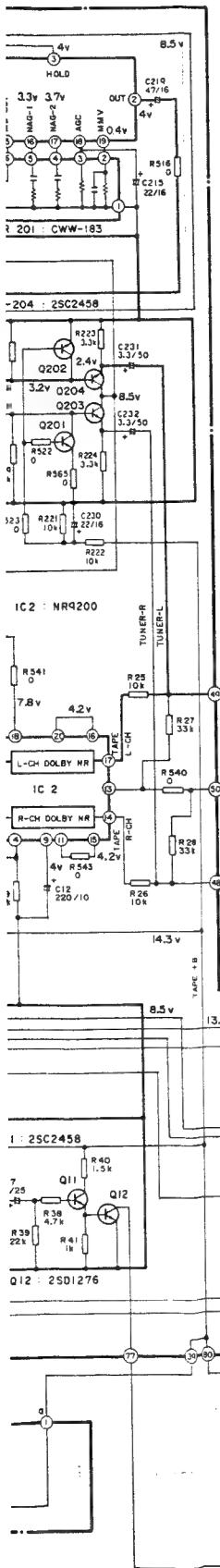
TUNER UNIT

| | | | | | | |
|-------|-------|-------|-------|------|------|------|
| Q301 | Q202 | Q201 | Q205 | Q254 | Q308 | Q304 |
| IC, Q | IC201 | IC1 | IC202 | Q256 | Q254 | Q255 |
| IC203 | Q302 | Q304 | Q203 | Q257 | Q317 | Q251 |
| Q306 | IC301 | IC302 | Q258 | Q316 | Q318 | Q307 |
| Q314 | Q311 | Q313 | Q260 | Q312 | Q8 | Q7 |
| Q315 | IC25 | | Q260 | Q5 | Q10 | Q12 |



8. SCHEMATIC CIRCUIT DIAGRAM (KEH-9000)



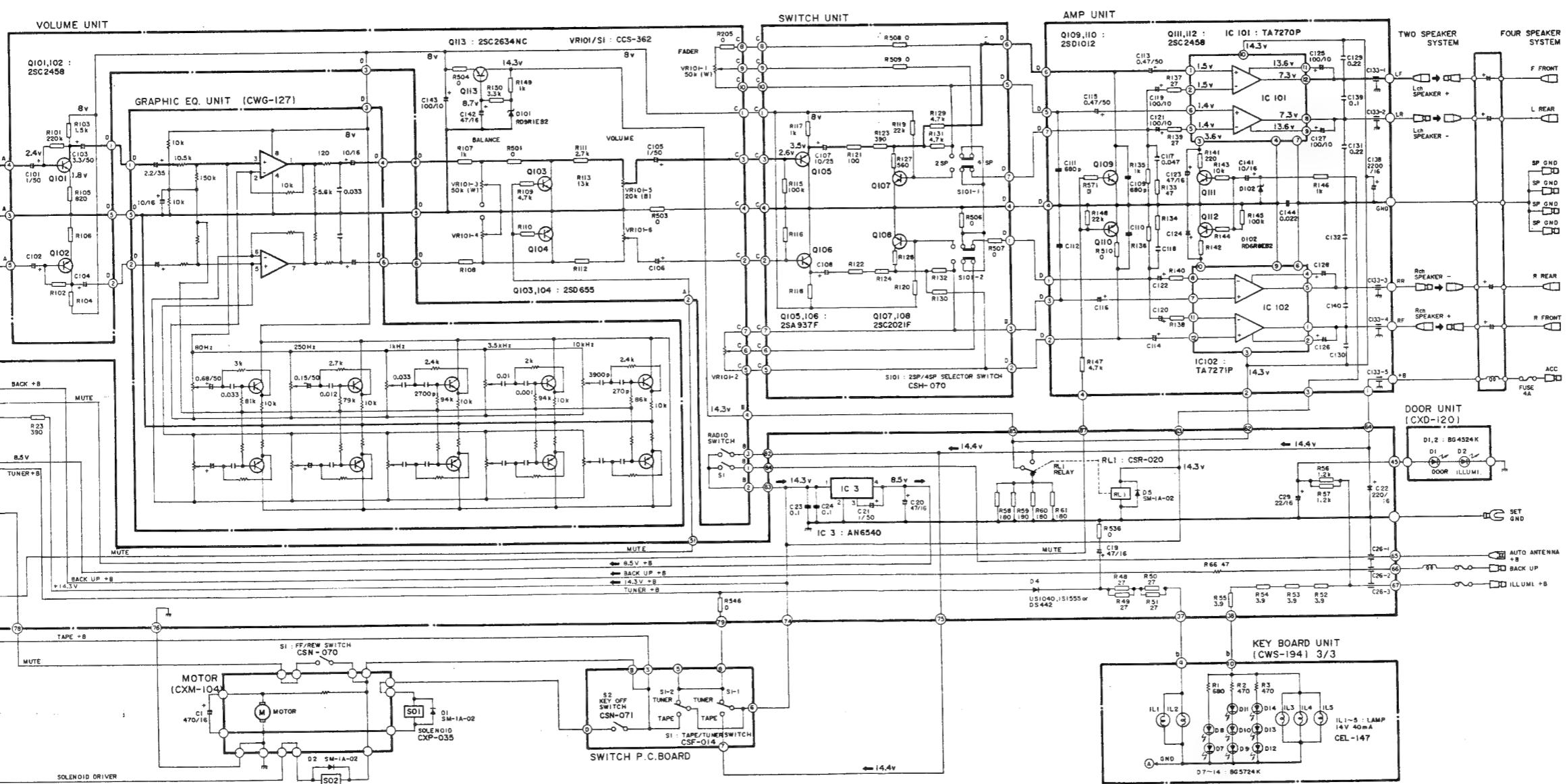


SWITCHES

- **SWITCH UNIT**
 - S101: 2SP/4SP SELECTOR SWITCH.....2SP-4S
- **SWITCH P.C. BOARD**
 - S1: TAPE/TUNER SWITCHTAPE-TUNE
 - S2: KEY OFF SWITCH.....ON-OFF
- **VOLUME UNIT**
 - S1: RADIO SWITCHON-OFF
- **HEAD UNIT**
 - S1: FWD/REV SWITCHFWD-REV
- **TUNER UNIT**
 - S1: MONO SWITCHMONO-AUTO
 - S2: METAL SWITCHON-OFF
 - S3: DOLBY NR SWITCH.....ON-OFF
- **MISCELLANEOUS**
 - S1: FF/REW SWITCHON-OFF

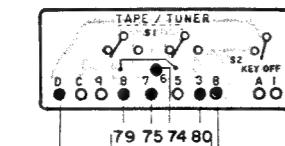
The underlined indicates the switch position

NOTE :
 Indicate a chip transistor
 Indicate a chip diode
 Indicate a chip resistor
 Indicate a chip capacitor



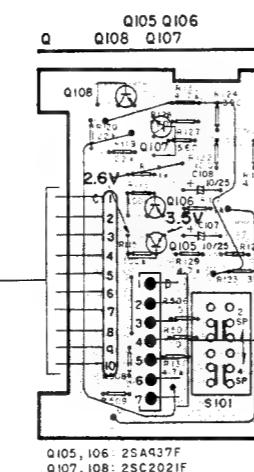
A

SWITCH P.C.BOARD



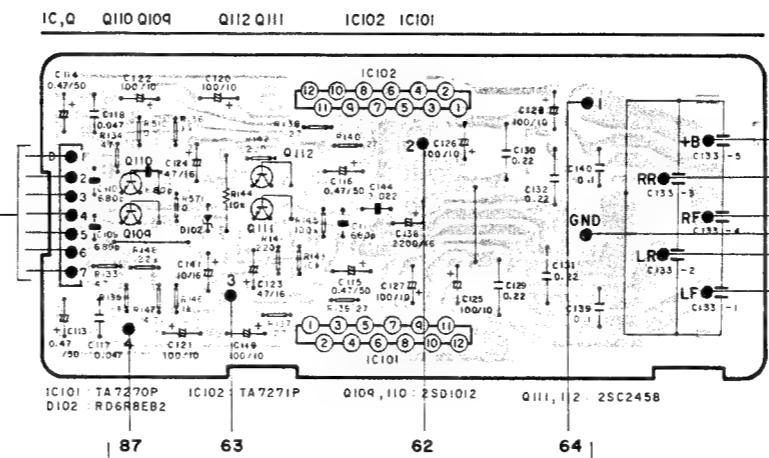
78
MOTOR (CXM-104)
470/16
MOTOR
76
77
SOLENOID CXP-034
SOI
DI SM-1A-02
S1 OFF/REW SWITCH CSN-070
79 75 74 80

SWITCH UNIT



Q105, 106: 2SA537F
Q107, 108: 2SC2021F

AMP UNIT



IC101 TA7270P IC102 TA7271P Q109, 110 2SD1012 Q111, 12 2SC2458
D102 RD68EB2

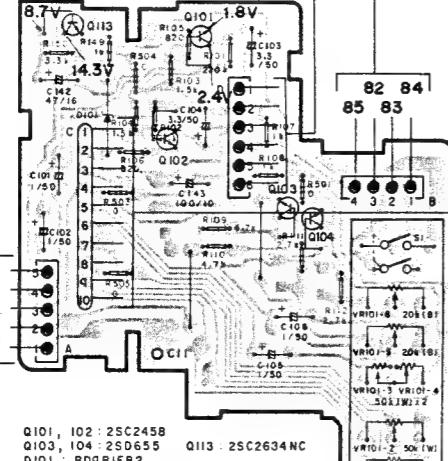
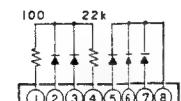
AMP UNIT

| | 1 | 2 | 3 | 4 | 5 | 6 |
|-------|-----|-----|------|------|------|-----|
| IC101 | 1.5 | 1.5 | 3.6 | 0 | 1.4 | 1.4 |
| IC102 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 0 | 7.3 | 13.6 | 14.3 | 13.6 | 7.3 |

(V)

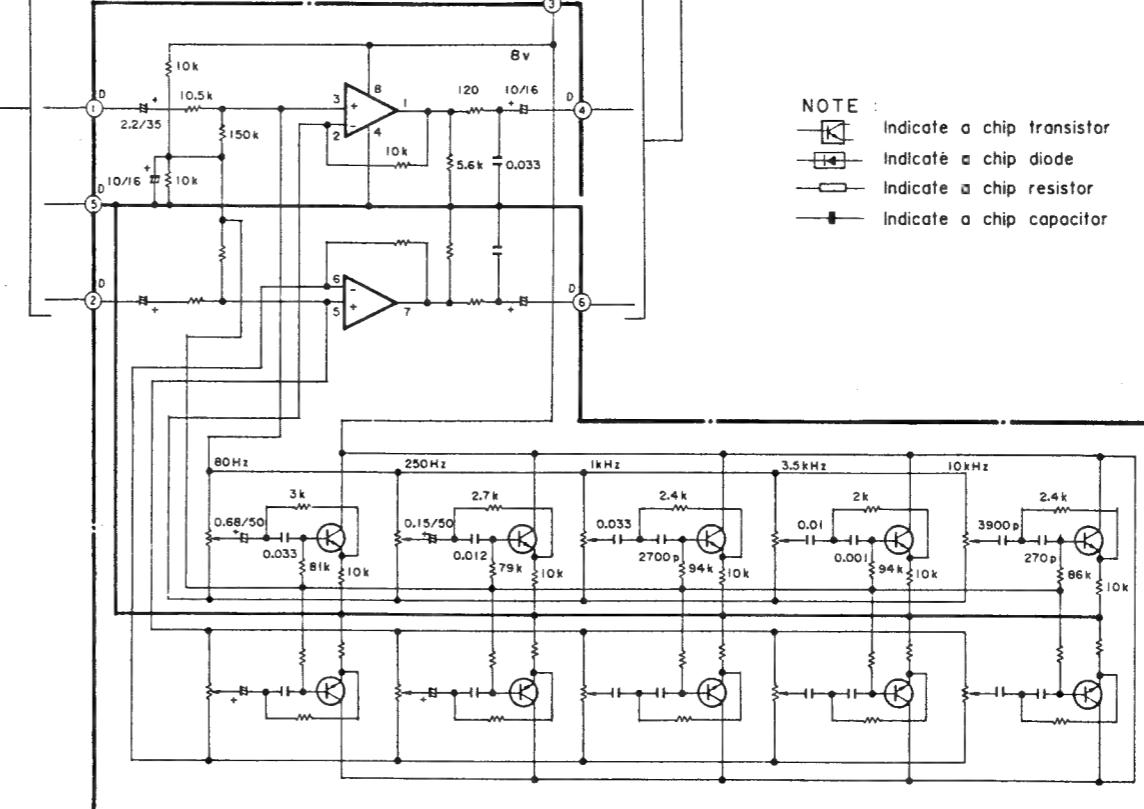
VOLUME UNIT

Q113 Q102 Q101 Q103 Q104



Q101, 102: 2SC2458
Q103, 104: 2SD635
D101: RD68EB2
C2458
442

GRAPHIC EQ. UNIT (CWG-127)



NOTE:
 Indicate a chip transistor
 Indicate a chip diode
 Indicate a chip resistor
 Indicate a chip capacitor

A

B

C

D

10. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

| | | | |
|------|------------------|-----|-----------------|
| 560Ω | 56×10^1 | 561 | RD1/4PS 5 6 1 J |
| 47kΩ | 47×10^3 | 473 | RD1/4PS 4 7 3 J |
| 0.5Ω | 0R5 | | RN2H 0 R 5 K |
| 1Ω | 010 | | RS1P 0 1 0 K |

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

| | | | |
|--------|-------------------|---------|-------------------|
| 5.62kΩ | 562×10^3 | 562 1 F | RN1/4SR 5 6 2 1 F |
|--------|-------------------|---------|-------------------|

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★: GENERALLY MOVES FASTER THAN ★.
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts whose parts numbers are omitted are subject to being not supplied.

FM Front End (CWB-151)

MISCELLANEOUS

| Mark | Symbol & Description | Part No. |
|--------|----------------------|-----------|
| ★★ IC1 | | CWW-173 |
| ★★ IC2 | | PA4009 |
| ★★ *Q1 | | P003 |
| ★★ Q2 | | 2SC2570 |
| ★★ Q3 | | 2SK241-GR |

| | | |
|-----------|----------------|----------|
| ★ D1 – D3 | | KV1310-6 |
| L1 | Coil | CTC-189 |
| L2 | Coil | CTC-190 |
| L3 | Coil | CTC-191 |
| L4 | Chip Inductor | CTF-185 |
| L5 | Chip Inductor | CTF-186 |
| T1 | Transformer | CTC-186 |
| T2 | IF Transformer | CTC-187 |
| TC1, TC2 | Trimmer | CCG-098 |
| CF1, CF2 | Ceramic Filter | CTF-182 |

RESISTORS

| Mark | Symbol & Description | Part No. |
|-----------------------|----------------------|-------------|
| R1, R2, R4 – R11, R14 | | RS1/8S□□□J |
| *R3, R12, R13 | Chip Resistor | RD1/6PS□□□J |

Caution:

Transistor *Q1 and resistor * R3 used mutually in the following assembly.

Q1

R3

| | |
|--------|-------------|
| P003-A | RD1/6PS473J |
| P003-B | RD1/6PS393J |

CAPACITORS

| Mark | Symbol & Description | Part No. |
|--------------------------|----------------------|-------------|
| ★★ C1, C2 | Chip Capacitor | CCSSH220J50 |
| ★★ C3, C8 | Chip Capacitor | CCSSH50C50 |
| ★★ C4, C5, C11, C15, C20 | | CKSYB222K50 |
| ★★ C6 | Chip Capacitor | CCSCH040C50 |
| ★★ C7, C10 | Chip Capacitor | CKSYB103K50 |
| ★★ C9 | Chip Capacitor | CCSSH560J50 |
| ★★ C12, C18 | Chip Capacitor | CCSTH150J50 |
| ★★ C13 | Chip Capacitor | CCSTH330J50 |
| ★★ C14 | Chip Capacitor | CCSTH120J50 |
| ★★ C16, C19, C21 | Chip Capacitor | CKSYF223Z50 |
| ★★ C17 | Chip Capacitor | CCSUJ080D50 |
| ★★ C22 | | CEA2R2M35LS |
| ★★ C23 | | CEA3R3M25LS |

Volume Unit

MISCELLANEOUS

| Mark | Symbol & Description | Part No. |
|---------------|---|-----------|
| ★★ Q101, Q102 | | 2SC2458 |
| ★★ Q103, Q104 | | 2SD655 |
| ★★ Q113 | | 2SC2634NC |
| ★★ D101 | | RD9R1EB2 |
| ★★ VR 101/S1 | Volume/Switch Volume, 50 kΩ(W) × 2, 20 kΩ(B) (Fader, Balance, Volume/Radio Switch) | CCS-362 |

RESISTORS (KEH-9300SDK)

| Mark | Symbol & Description | Part No. |
|-------------------------|----------------------|------------|
| R101 – R114, R149, R150 | Chip Resistor | RS1/8S□□□J |
| R501 – R505 | Chip Resistor 0Ω | RS1/8S0R0J |

RESISTORS (KEH-9300, 9000)

| Mark | Symbol & Description | Part No. |
|-------------------------|----------------------|------------|
| R101 – R122, R149, R150 | Chip Resistor | RS1/8S□□□J |
| R501, R503 – R504 | Chip Resistor 0Ω | RS1/8S0R0J |

CAPACITORS

| Mark | Symbol & Description | Part No. |
|------------------------|----------------------|-------------|
| C101, C102, C105, C106 | | CEA010M50LS |
| C103, C104 | | CEA3R3M50LS |
| C142 | | CEA470M16LS |
| C143 | | CEA101M10L2 |

Switch Unit

MISCELLANEOUS

| Mark | Symbol & Description | Part No. |
|---------------|----------------------|----------|
| ★★ Q105, Q106 | | 2SA937F |
| ★★ Q107, Q108 | | 2SC2021F |

RESISTORS (KEH-9300SDK)

| Mark | Symbol & Description | Part No. |
|-------------|----------------------|------------|
| R115 – R132 | Chip Resistor | RS1/8S□□□J |
| R506 – R509 | Chip Resistor 0Ω | RS1/8S0R0J |

RESISTORS (KEH-9300, 9000)

| Mark | Symbol & Description | Part No. |
|--------------------------|----------------------|------------|
| R115 – R124, R127 – R132 | Chip Resistor | RS1/8S□□□J |
| R506 – R509 | Chip Resistor 0Ω | RS1/8S0R0J |

CAPACITORS

| Mark | Symbol & Description | Part No. |
|------------|----------------------|-------------|
| C107, C108 | | CEA100M25LS |

Amp Unit

MISCELLANEOUS

| Mark | Symbol & Description | Part No. |
|---------------|----------------------|----------|
| ★★ IC101 | | TA7270P |
| ★★ IC102 | | TA7271P |
| ★★ Q109, Q110 | | 2SD1012 |
| ★★ Q111, Q112 | | 2SC2458 |
| ★★ D102 | | RD6R8EB2 |

RESISTORS

| Mark | Symbol & Description | Part No. |
|--------------------------|----------------------|-------------|
| R133 – R143, R145 – R148 | Chip Resistor | RS1/8S□□□J |
| R144 | | RD1/4PM□□□J |
| R510, R571 | Chip Resistor 0Ω | RS1/8S0R0J |

CAPACITORS

| Mark | Symbol & Description | Part No. |
| --- | --- | --- |

<tbl_r cells="3" ix="1" maxcspan="1" maxrspan="1" usedcols="3

Switch P.C. Board

| Mark | Symbol & Description | Part No. |
|--------|----------------------|----------|
| ★ ★ S1 | Switch (Tape/Tuner) | CSF-014 |
| ★ ★ S2 | Switch (Key Off) | CSN-071 |

SDK Unit (KEH-9300SDK)

| Mark | Symbol & Description | Part No. |
|------------------------------|----------------------|----------|
| ★ ★ IC401 | | S0280 |
| ★ ★ IC402 | | TA7558P |
| ★ ★ IC403 | | S551 |
| ★ ★ Q401 — Q404, Q408 — Q410 | | 2SC2458 |
| ★ ★ Q405 | | 2SK30A-O |

| Mark | Symbol & Description | Part No. |
|-----------------|----------------------|---|
| ★ ★ Q406 | | 2SA1048-GR |
| ★ ★ Q407 | | 2SA1048 |
| ★ ★ Q411 — Q413 | Chip Transistor | 2SC2712-LG or 2SC2712-LL or 2SC2712-LY or |

| Mark | Symbol & Description | Part No. |
|-----------------------|-----------------------|---|
| ★ ★ D401 — D405, D410 | | 1S1555 or US2076 or |
| ★ ★ D406 — D408 | | 1S2473 US1040 or 1S1555 or DS442 |
| ★ ★ D409 | Chip Diode | MA151WA |
| L401, L402 | Coil | CTF-125 |
| CF401 | Ceramic Resonator | CTF-109 |
| ★ ★ VR401 | Semi-fixed, 4.7kΩ (B) | CCP-243 |

RESISTORS

| Mark | Symbol & Description | Part No. |
|--------------------------|----------------------|------------|
| R401 — R437, R439 — R444 | Chip Resistor | RS1/8S000J |
| R551 — R563, R570, R572 | Chip Resistor 0Ω | RS1/8S0R0J |

CAPACITORS

| Mark | Symbol & Description | Part No. |
|------------------|----------------------|--------------|
| C401, C415, C425 | Chip Capacitor | CKSYB223K25 |
| C402, C403, C406 | Chip Capacitor | CCSSL391J50 |
| C404 | Chip Capacitor | CKSYB681K50 |
| C405, C417 | | CEA220M16LS |
| C407 | | CEA101M16L2 |
| C408, C414 | Chip Capacitor | CKSYB103K50 |
| C409, C412 | | CQSA102J50 |
| C410, C413 | | CCDLH680J50L |
| C411 | | CCDLH120J50L |
| C416 | | CQSA151J50 |

| Mark | Symbol & Description | Part No. |
|------|----------------------|--------------|
| C418 | | CEAR33M50LS2 |
| C419 | | CEA0R1M50LS2 |
| C420 | Chip Capacitor | CKSYF104Z25 |
| C421 | | CQMA103J50L |
| C422 | | CQMA333J50L |

| Mark | Symbol & Description | Part No. |
|------------|----------------------|--------------|
| C423 | | CEA100M25LS |
| C424, C427 | | CEA010M59LS2 |
| C426 | | CEA100M16L2 |

Tuner Unit (KEH-9300SDK, 9300)

MISCELLANEOUS

| Mark | Symbol & Description | Part No. |
|-----------|----------------------|----------|
| ★ ★ IC1 | | MB3106M |
| ★ ★ IC2 | | NR9200 |
| ★ ★ IC3 | | AN6540 |
| ★ ★ IC201 | | PA0013 |
| ★ ★ IC202 | | PA0014 |

| Mark | Symbol & Description | Part No. |
|--------------------------|----------------------|---------------------------|
| ★ ★ IC203 | | PA0015 |
| ★ ★ IC251 | | HA12434-A or HA12434-B |
| ★ ★ IC301 | | PD4041 |
| ★ ★ Q1 — Q4, Q7, Q8, Q11 | | 2SC2458 |

| Mark | Symbol & Description | Part No. |
|--------------------------------|----------------------|---|
| ★ ★ Q5 | | 2SD667 |
| ★ ★ Q6, Q301, Q302, Q304, Q313 | | 2SA1048 |
| ★ ★ Q9, Q205, Q308, Q309 | Chip Transistor | 2SC2712-LG or 2SC2712-LL or 2SC2712-LY or |

| Mark | Symbol & Description | Part No. |
|---|----------------------|-----------|
| ★ ★ Q10 | Chip Transistor | 2SB709-AS |
| ★ ★ Q12 | | 2SD1276 |
| ★ ★ Q201 — Q204, Q252 — Q260, Q306, Q307, Q312, Q316 | | 2SC2458 |
| ★ ★ Q251 | | 2SK163 |

| Mark | Symbol & Description | Part No. |
|---|----------------------|----------|
| ★ ★ Q303 (KEH-9300SDK) | | 2SA1048 |
| ★ ★ Q305 (KEH-9300SDK), Q315 (KEH-9300SDK) | | 2SC2458 |
| ★ ★ Q310, Q311 | | 2SK330-Y |
| ★ ★ Q314 | | 2SD1055F |

| Mark | Symbol & Description | Part No. |
|-----------------------|----------------------|---------------------------------|
| ★ ★ Q317, Q318 | | 2SB822F |
| ★ D1 | | RD9R1EB2 |
| ★ D2, D4, D202 — D205 | | 1S1555 or US1040 or DS442 |

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★ D3 | | RD9R1EB3 |
| ★ D5 | | SM-1A-02 |

| Mark | Symbol & Description | Part No. |
|---|----------------------|---|
| ★ D251 — D254 | | 1S1555 |
| ★ D255 | | KV1235Z5-A or KV1235Z5-B or KV1235Z5-C or KV1235Z5-D or KV1235Z5-E or KV1235Z5-F |
| ★ D301, D304, D311 (KEH-9300 SDK) | Chip Diode | MA151WA |
| ★ D302 (KEH-9300SDK), D303, D306, D312, D313 | | US1040 or 1S1555 or DS442 |

| Mark | Symbol & Description | Part No. |
|--------|----------------------|----------|
| ★ D305 | | RD3R3EB2 |
| ★ D307 | | RD5R6EB2 |
| ★ D308 | Chip Diode | MA151WK |
| ★ D309 | | RD6R2EB2 |
| ★ D310 | | RD4R7EB1 |

| Mark | Symbol & Description | Part No. |
|------|-----------------------|----------|
| L201 | FERRI-INDUCTOR, 15μH | CTF-156 |
| L202 | FERRI-INDUCTOR, 2.7μH | CTF-155 |
| L251 | | |

| Mark | Symbol & Description | Part No. | Mark | Symbol & Description | Part No. |
|------------------------------|--|---|------------|--|---|
| C266 | Chip Capacitor | CCSCH680J50 | ★ ★ | Q301, Q302, Q304, Q313 | 2SA1048 |
| C267 | | CCDRH510J50L | ★ ★ | Q311 | 2SK330-Y |
| C268 | Chip Capacitor | CCSPH270J50 | ★ ★ | Q312, Q316 | 2SC2458 |
| C269 | | CQPA331G100 | ★ ★ | Q314 | 2SD1055F |
| C270 | | CCDCH070D50L | ★ ★ | Q317, Q318 | 2SB822F |
| C272 | | CCDSH430J50L | ★ | D1 | RD9R1EB2 |
| C278, C280, C287, C293 | Chip Capacitor | CKSYF473Z50 | ★ | D2, D4, D202 – D205, D306, D312, D313 | 1S1555 or DS442 or US1040 |
| C279 | | CEA010M50LS2 | ★ | D3 | RD9R1EB3 |
| C281 | | CEAR47M50LS2 | ★ | D5 | SM-1A-02 |
| C283 | | CEA220M16LS | ★ | D251 – D254 | 1S1555 |
| C284 | | CEA3R3M50LS | ★ | D255 | KV1235Z5-A or KV1235Z5-B or KV1235Z5-C or |
| C285 | | CEAR33M50LS2 | | | |
| C290 | | CEA101M10L2 | | | |
| C291, C292 | Chip Capacitor | CCSSH090D50 | | | |
| C302, C317, C318 | Chip Capacitor | CKSYF473Z50 | | | |
| C303 | Chip Capacitor | CCSCH270J50 | ★ | D301, D304 | Chip Diode |
| C304 | Chip Capacitor | CCSCH220J50 | ★ | D305 | MA151WA |
| C305 | | CEAR15M50LS2 | ★ | D307 | RD3R3EB2 |
| C306 | | CSZA010M25 | ★ | D308 | RD5R6EB2 |
| C307, C308 | | CSZA100M25 | ★ | D309 | MA151WK |
| C309, C314, C315 | Chip Capacitor | CKSYB103K50 | ★ | D310 | RD6R2EB2 |
| C310, C311 | | CEA220M16LS | L201 | L201 | RD4R7EB1 |
| C312 | | CEA4R7M35LS | ★ | D310 | CTF-156 |
| C313 | | CEA221M16L2 | L201 | L201 | CTF-155 |
| C316 | | CEA221M6R3L2 | L202 | L202 | CTF-157 |
| | | | T201 | T201 | CTC-171 |
| | | | T251 | T251 | CTB-144 |
| | | | T252 | T252 | CTB-161 |
| Tuner Unit (KEH-9000) | | | | | |
| MISCELLANEOUS | | | | | |
| Mark | Symbol & Description | Part No. | | | |
| ★ ★ | IC1 | MB3106M | T253, T255 | Coil | CTB-151 |
| ★ ★ | IC2 | NR9200 | T257 | Coil | CTB-161 |
| ★ ★ | IC3 | AN6540 | T259 | AM Coil | CTE-131 |
| ★ ★ | IC201 | PA0013 | T260 | AM Coil | CTE-141 |
| ★ ★ | IC202 | PA0014 | IB1 | | CWW-26 |
| ★ ★ | IC203 | PA0015 | RL1 | Relay | CSR-02 |
| ★ ★ | IC251 | HA12434-A or HA12434-B | CR201 | | CWW-83 |
| ★ ★ | IC301 | PD4041 | CR202 | | CWW-32 |
| ★ ★ | Q1 – Q4, Q7, Q8, Q11 | 2SC2458 | CF201 | Ceramic Filter | CTF-181 |
| ★ ★ | Q5 | 2SD667 | CF251 | Filter | CTF-101 |
| ★ ★ | Q6 | 2SA1048 | | | |
| ★ ★ | Q9, Q205 | Chip Transistor | CF252 | Filter | CTF-161 |
| | | 2SC2712-LG or 2SC2712-LL or 2SC2712-LY or | S1 – S3 | Switch | CSG-271 |
| | | 2SD601-YQ or 2SD601-YR or 2SD601-YS | ★ ★ | VR1, VR2 | Semi-fixed, 33 kΩ(B) |
| ★ ★ | Q10 | 2SB709-AQ or 2SB709-AR or | ★ ★ | VR201 | Semi-fixed, 22 kΩ(B) |
| | | 2SB709-AS | ★ ★ | VR202 | Semi-fixed, 1.5 kΩ(B) |
| | | 2SD1276 | ★ ★ | VR203 | Semi-fixed, 6.8 kΩ(B) |
| ★ ★ | Q12 | 2SC2458 | X301 | Crystal Resonator | CCP-24 |
| ★ ★ | Q201 – Q204, Q252, Q253, Q259, Q260 | | | | CSS-02 |
| ★ ★ | Q251 | 2SK163 | | | |

RESISTORS

| Mark | Symbol & Description | Part No. |
|------|---|-------------|
| | R1 — R14, R16 — R23, R25 — R35, R38 — R43, R46 — R65, R68, R68, R201 — R206, R208 — R210, R212, R214 — R225, R251 — R256, R261 — R274, R282 — R284, R288, R301 — R304, | RS1/8S□□□J |
| | R306 — R308, R314 — R318, R323, R325, R326 — R333, R336, R338 — R340 Chip Resistor | |
| | R44, R66, R207, R211 | RD1/4PM□□□J |
| | R285 — R287 | RD1/6VS□□□J |
| | R511 — R526, R528, R531 — R549, R564 R565 Chip Resistor 0Ω | RS1/8S0R0J |

| Mark | Symbol & Description | Part No. |
|-------------------------|----------------------|--------------|
| C229 | | CQSA102J50 |
| C231, C232 | | CEA3R3M50LS |
| C251, C254, C257, C274, | | CKSYB223K25 |
| C277, C286 | Chip Capacitor | CKSYB103K50 |
| C252, C288 | Chip Capacitor | CKSYB103K50 |
| C253 | Chip Capacitor | CKSYB332K50 |
| C255, C256, C261, C262, | | CKSYF473Z50 |
| C264 | Chip Capacitor | CKSYF104Z25 |
| C258, C273, C289 | Chip Capacitor | CEA221M10L2 |
| C259 | | CEA470M16LS |
| C265, C282 | | CCSPH470J50 |
| C266 | Chip Capacitor | CQPA431G100 |
| C267 | | CCDCH110J50L |
| C270 | | CKSYF473Z50 |
| C278, C280, C287 | Chip Capacitor | |

CAPACITORS

| Mark | Symbol & Description | Part No. |
|-------------------------------------|------------------------|---------------|
| C1, C2 | Chip Capacitor | CKSYB681K50 |
| C3, C4, C11, C13 – C15, C19, C20 | | CEA470M16LS |
| C5, C6 | | CEANL4R7M50LL |
| C7, C8, C30 | Chip Capacitor | CKSYB103K50 |
| C9, C10, C31 | Chip Capacitor | CKSYB223K25 |
| C12 | | CEA221M10L2 |
| C16, C17, C25 | | CEA100M25LS |
| C18 | | CEA4R7M35LS |
| C21 | | CEA010M50LS2 |
| <u>C22</u> | | CEA221M16LS |
| C23, C24 | Chip Capacitor | CKSYF104Z25 |
| C26 | Feed through Capacitor | CCL-124 |
| C29 | | CEA220M16LS |
| C201 | Chip Capacitor | CKSYF104Z25 |
| C202, C204, C211 | | CEA010M50LS2 |
| C203, C213 | Chip Capacitor | CCSSL101K50 |
| C205, C217 | | CEA10M25LS |
| C206 – C210 | Chip Capacitor | CKSYB223K25 |
| C212, C221 | Chip Capacitor | CKSYB103K50 |
| C214 | | CEA2R2M50LS2 |
| C215, C230 | | CEA220M16LS |
| C216 | Chip Capacitor | CKSYB681K50 |
| C218 | | CEA4R7M35NPLL |
| C219, C220 | | CEA470M16LS |
| C222 – C224 | Chip Capacitor | CKSYB822K50 |
| C225 | | CQMA183J50L |
| C226 | | CSZA010M25 |
| C227 | | CSZA1R5M25 |
| C228 | | CSZA2R2M25 |

| | |
|------------------|----------------|
| C279 | CEA010M50LS2 |
| C281 | CEAR47M50LS2 |
| C283 | CEA220M16LS |
| C284 | CEA3R3M50LS |
| C285 | CEAR33M50LS2 |
| | |
| C290 | CEA101M10L2 |
| C291, C292 | CCSSH100D50 |
| C302, C317, C318 | Chip Capacitor |
| C303 | Chip Capacitor |
| C304 | Chip Capacitor |
| | |
| C307, C308 | CSZA100M25 |
| C309, C314, C315 | Chip Capacitor |
| C310, C311 | CKSYB103K50 |
| C312 | CEA220M16LS |
| C313 | CEA4R7M35LS |
| | |
| C316 | CEA221M16L2 |

Miscellaneous Parts List

| Mark | Symbol & Description | Part No. |
|------|----------------------|-------------|
| | Graphic EQ. Unit | CWG-127 |
| ★ | D1, D2 | SM-1A-02 |
| ★ ★ | M Motor | CXM-104 |
| ★ | SO1 Solenoid | CXP-035 |
| ★ | SO2 Solenoid | CXP-034 |
| ★ ★ | S1 Switch (FF/REW) | CSN-070 |
| | C1 | CEA471M16L2 |

11. CABINET EXPLODED VIEW

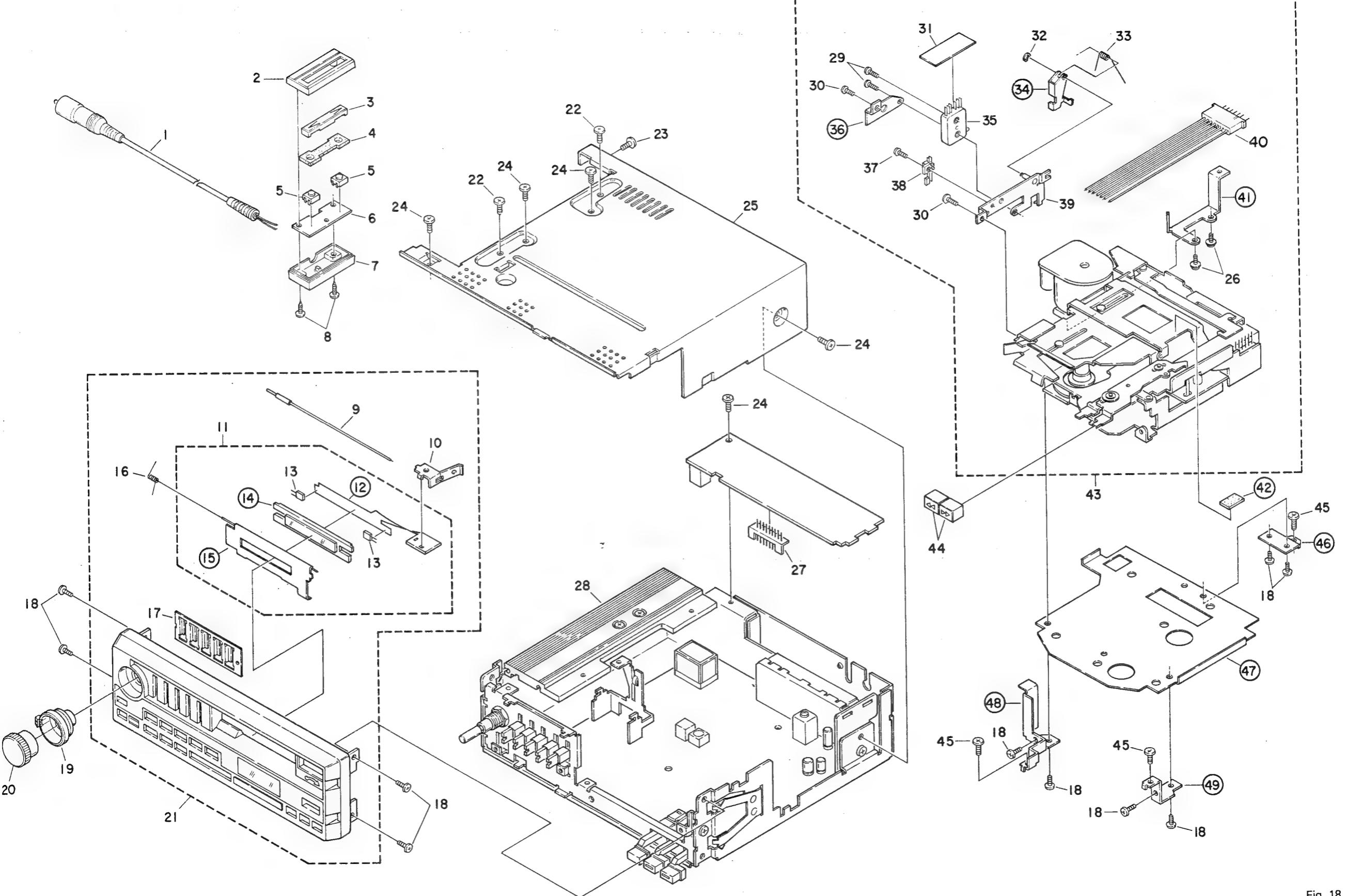


Fig. 18

• Parts List

NOTE:

- For your P
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★ ★ : GEI
This classif
number, te
- Parts who

| Mark | No. |
|------|-----|
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |
| 4. | 4. |
| 5. | 5. |
| 6. | 6. |
| 7. | 7. |
| 8. | 8. |
| 9. | 9. |
| 10. | 10. |
| 11. | 11. |
| 12. | 12. |
| 13. | 13. |
| 14. | 14. |
| 15. | 15. |
| 16. | 16. |
| 17. | 17. |
| 18. | 18. |
| 19. | 19. |
| 20. | 20. |
| 21. | 21. |
| 22. | 22. |
| 23. | 23. |
| 24. | 24. |
| 25. | 25. |
| 26. | 26. |
| 27. | 27. |
| 28. | 28. |
| 29. | 29. |
| 30. | 30. |
| 31. | 31. |
| 32. | 32. |
| 33. | 33. |
| 34. | 34. |
| 35. | 35. |
| 36. | 36. |
| 37. | 37. |
| 38. | 38. |
| 39. | 39. |
| 40. | 40. |
| 41. | 41. |
| 42. | 42. |
| 43. | 43. |
| 44. | 44. |
| 45. | 45. |
| 46. | 46. |
| 47. | 47. |
| 48. | 48. |
| 49. | 49. |

• Parts List

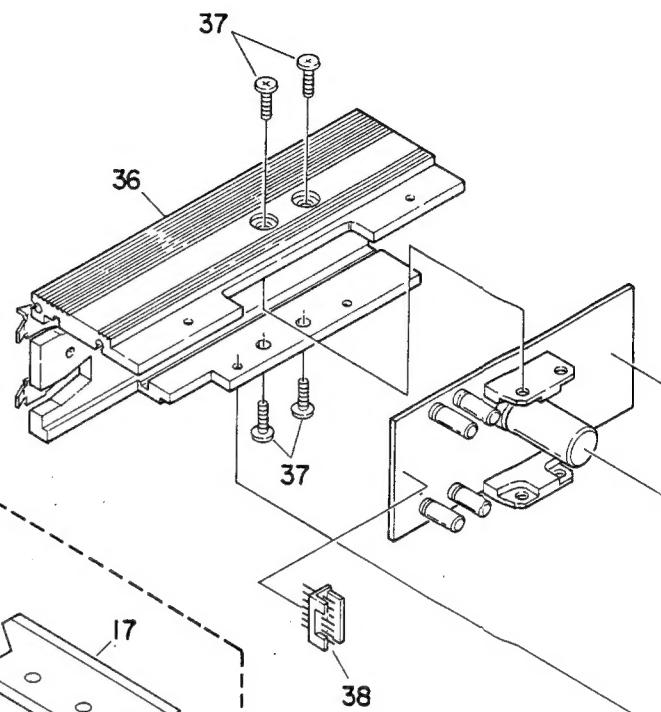
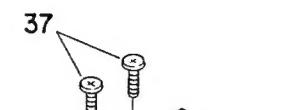
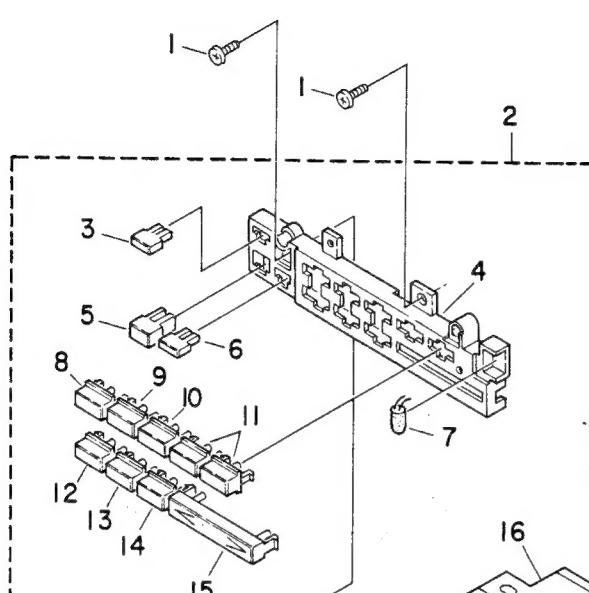
NOTE:

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★: GENERALLY MOVES FASTER THAN ★.
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts whose parts numbers are omitted are subject to being not supplied.

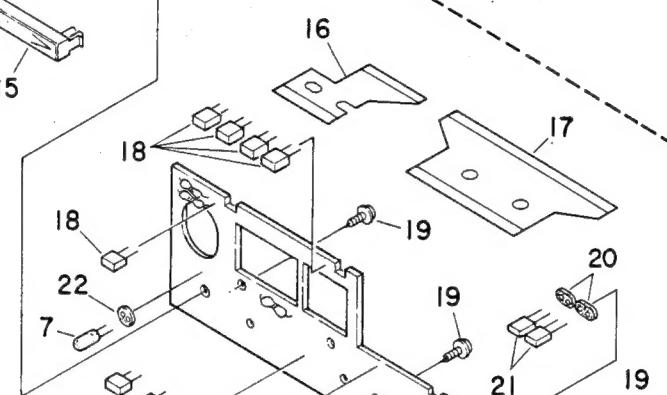
| Mark | No. | Part No. | Description | Mark | No. | Part No. | Description |
|------|-----|--------------|------------------------------|------|-----|--------------|---------------------------|
| | 1. | CDE-859 | Cord | | | CWM-211 | Tuner Amp Assy (KEH-9300) |
| | 2. | CNK-095 | Case | | | CWM-210 | Tuner Amp Assy (KEH-9000) |
| ★ | 3. | CAC-770 | Button | | 29. | CBA-106 | Screw |
| | 4. | CNN-134 | Spacer | | 30. | BMZ23P025FMC | Screw |
| ★★ | 5. | CSG-176 | Switch | | 31. | CNL-278 | P.C. Board |
| | 6. | CNL-562 | P.C. Board | | 32. | YE15FUC | Washer |
| | 7. | CNK-094 | Case | | 33. | CBH-680 | Spring |
| | 8. | BMZ26P050FBK | Screw | | 34. | | Arm |
| | 9. | CDF-055 | Connector | ★★ | 35. | CSF-014 | Switch |
| | 10. | CNG-240 | Holder | | 36. | | Cover |
| | 11. | CXD-120 | Door | | 37. | BMZ20P040FMC | Screw |
| | 12. | | P.C. Board | | 38. | CSN-071 | Switch |
| ★ | 13. | BG4524K | LED | | 39. | CXC-743 | Bracket Unit |
| | 14. | | Lens | | 40. | CDF-588 | Connector |
| | 15. | | Door | | 41. | | Bracket |
| | 16. | CBH-684 | Spring | | 42. | | Spacer |
| | 17. | CBL-217 | Spring | | 43. | CXK-310 | Cassette Mechanism Assy |
| | 18. | BMZ26P040FMC | Screw | ★ | 44. | CAC-554 | Button |
| ★ | 19. | CAA-501 | Knob | | 45. | BMZ30P050FMC | Screw |
| ★ | 20. | CAA-502 | Knob | | 46. | | Bracket |
| | 21. | CXD-119 | Grille Assy (KEH-9300SDK) | | 47. | | Bracket |
| | | CXD-166 | Grille Assy (KEH-9300, 9000) | | 48. | | Bracket |
| | 22. | BMZ30P060FMC | Screw | | 49. | | Bracket |
| | 23. | BMZ30P040FMC | Screw (KEH-9300SDK) | | | | |
| | 24. | BMZ30P040FMC | Screw | | | | |
| | 25. | CXD-125 | Case Unit (KEH-9300SDK) | | | | |
| | | CXD-124 | Case Unit (KEH-9300, 9000) | | | | |
| | 26. | PMS26P040FMC | Screw | | | | |
| | 27. | CKS-275 | Plug | | | | |
| | 28. | CWM-209 | Tuner Amp Assy (KEH-9300SDK) | | | | |

12. TUNER AMP ASSY (1/2) EXPLODED VIEW

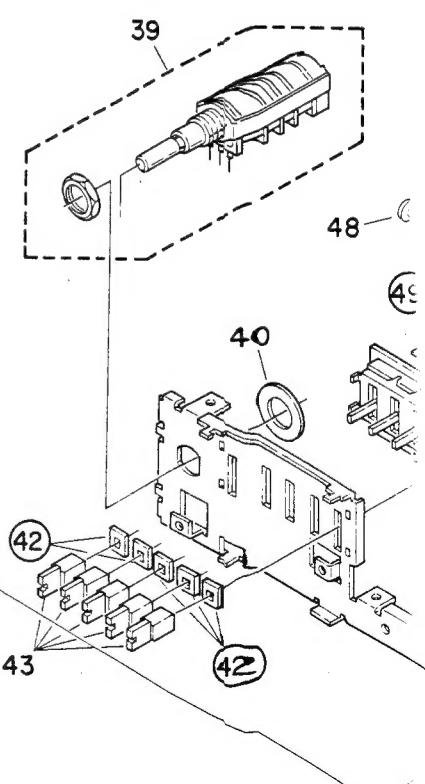
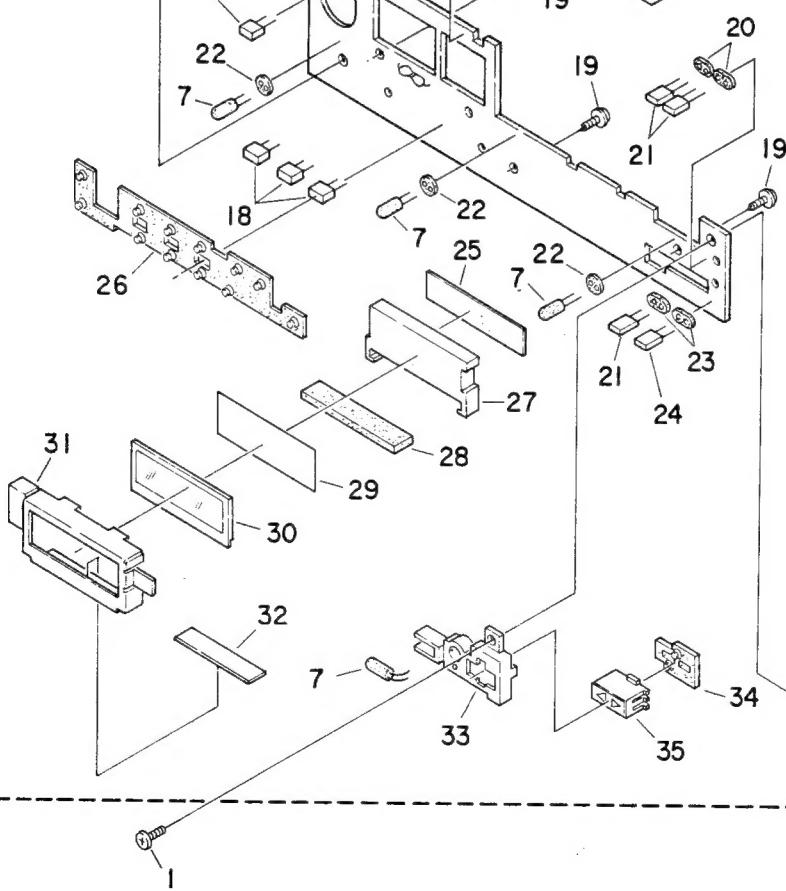
A



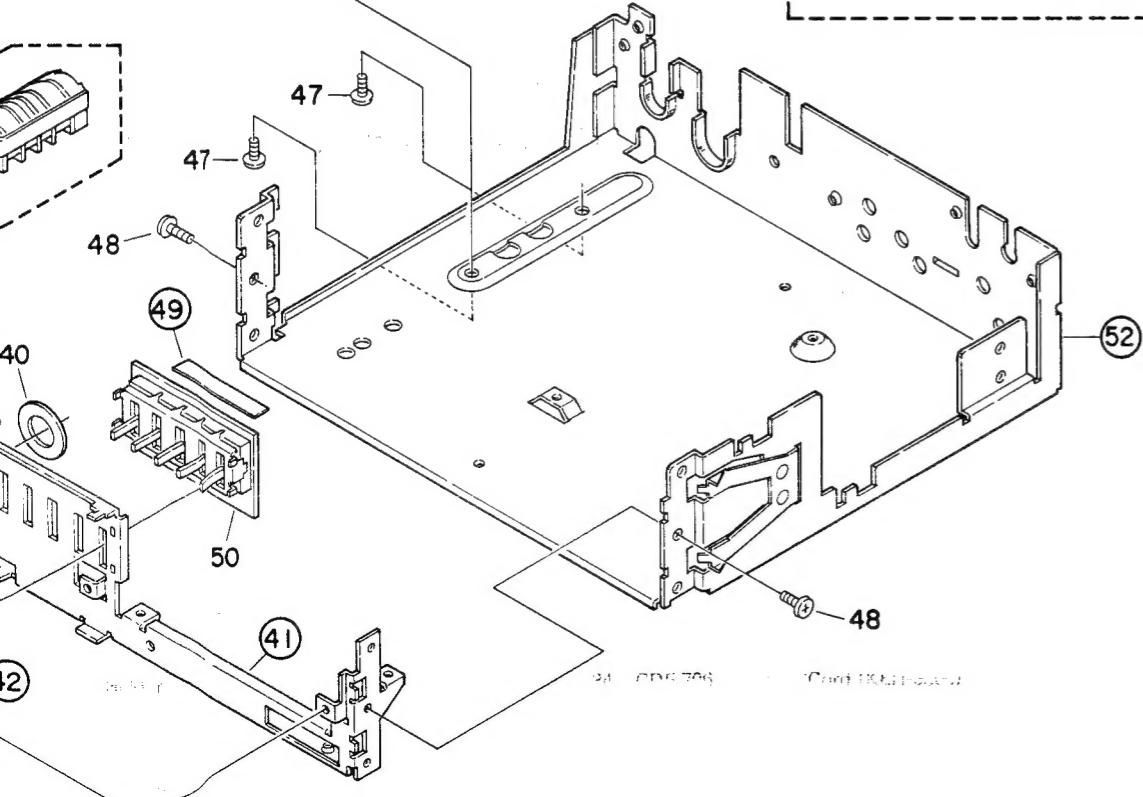
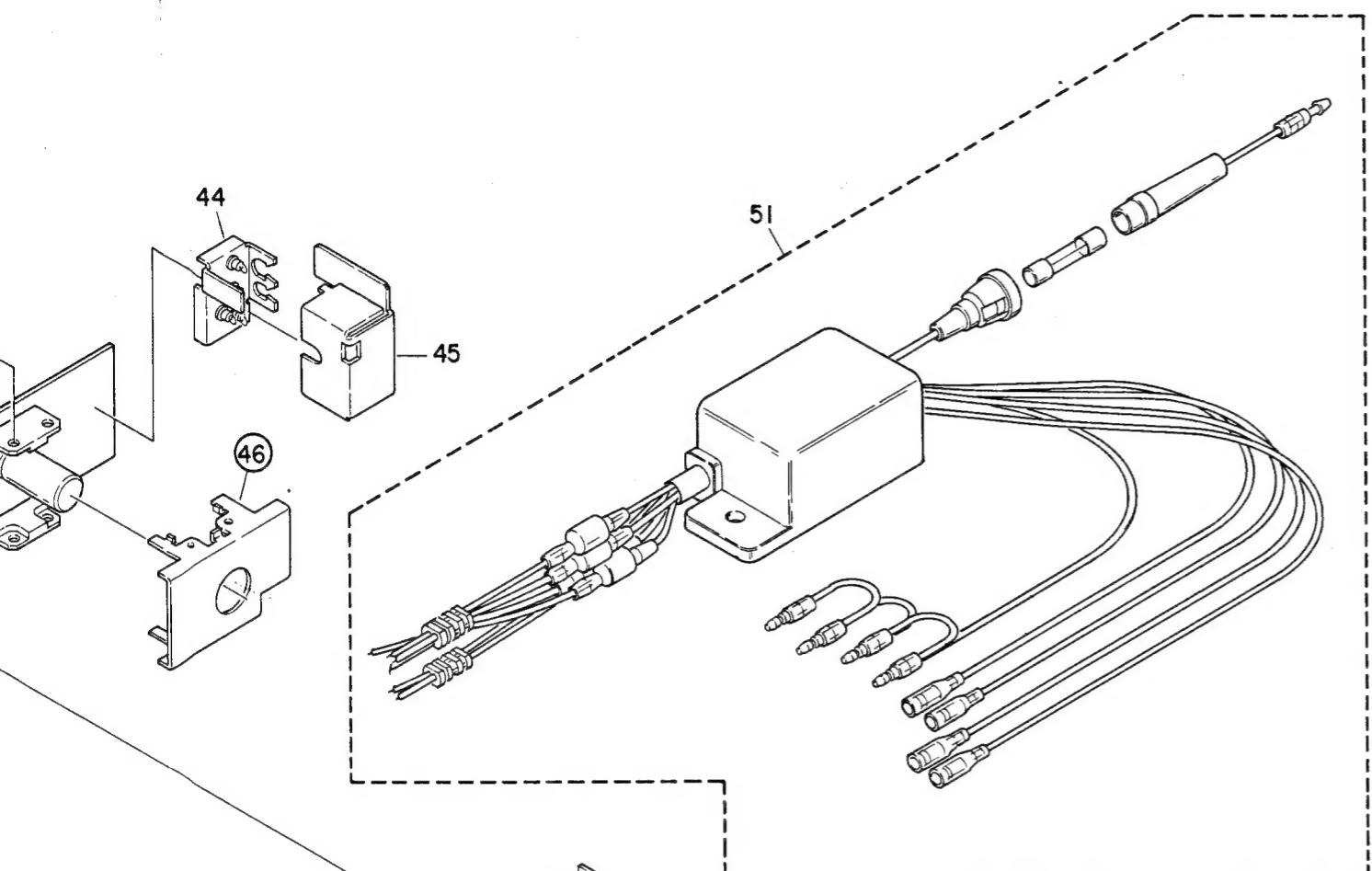
B



C



D



• Parts List

| Mark | No. | Part No. | Description |
|------|-----|--------------|------------------------------|
| | 1. | BMZ26P060FMC | Screw |
| | 2. | CWS-192 | Key Board Unit (KEH-9300SDK) |
| | 3. | CWS-197 | Key Board Unit (KEH-9300) |
| | 4. | CWS-194 | Key Board Unit (KEH-9000) |
| ★ | 3. | CAC-789 | Button (KEH-9300SDK) |
| | 4. | CNW-653 | Holder |
| ★ | 5. | CAC-699 | Button |
| ★ | 6. | CAC-700 | Button |
| ★★ | 7. | CEL-147 | Lamp, 14V 40mA |
| ★ | 8. | CAC-782 | Button |
| ★ | 9. | CAC-783 | Button |
| ★ | 10. | CAC-784 | Button |
| ★ | 11. | CAC-697 | Button |
| ★ | 12. | CAC-785 | Button |
| ★ | 13. | CAC-786 | Button |
| ★ | 14. | CAC-787 | Button |
| ★ | 15. | CAC-698 | Button |
| | 16. | CNL-475 | P.C. Board |
| | 17. | CNL-476 | P.C. Board |
| ★ | 18. | BG5724K | LED |
| | 19. | BTN26P060FMC | Screw |
| | 20. | CNW-549 | Spacer |
| ★ | 21. | BG3422K | LED |
| | 22. | CNW-662 | Spacer |
| | 23. | CNW-549 | Spacer |
| ★ | 24. | AA3422K | LED |
| | 25. | CNN-137 | Spacer |
| | 26. | CNN-649 | Rubber |
| | 27. | CNN-754 | Lens |
| | 28. | CNN-656 | Rubber |

| Mark | No. | Part No. | Description |
|------|-----|--------------|-------------------------|
| | 29. | CNW-655 | Plate |
| | 30. | FTD-6082H | LCD (KEH-9300SDK, 9300) |
| | 31. | FTD-6081H | LCD (KEH-9000) |
| | 32. | CNG-095 | Holder |
| | 33. | CNN-052 | Insulator |
| ★ | 33. | CNW-650 | Holder |
| | 34. | CNW-648 | Rubber |
| ★ | 35. | CAC-790 | Button |
| | 36. | CXD-123 | Heat Sink Unit |
| | 37. | BMZ26P100FMC | Screw |
| ★★ | 38. | CKS-272 | Plug |
| ★★ | 39. | CCS-362 | Volume/Switch |
| | 40. | CBE-084 | Spacer |
| | 41. | CBE-084 | Frame |
| | 42. | CBE-084 | Spacer |
| ★ | 43. | CAA-503 | Knob |
| | 44. | CCL-123 | Feed through Capacitor |
| | 45. | CNG-088 | Holder |
| | 46. | CNG-088 | Holder |
| | 47. | BMZ30P060FMC | Screw |
| | 48. | BMZ30P040FMC | Screw |
| | 49. | CNW-655 | Insulator |
| | 50. | CWG-127 | Graphic EQ. Unit |
| | 51. | CDF-592 | Cord |
| | 52. | CDF-592 | Chassis Unit |

C 13. TUNER AMP ASSY (2/2) EXPLODED VIEW

• Parts List

| Mark | No. | Part No. | Description |
|------|-----|--------------|------------------------|
| ★★ | 1. | CDF-731 | Connector |
| | 2. | CDF-671 | Connector |
| | 3. | CDF-729 | Cord |
| ★★ | 4. | CSH-070 | Switch |
| | 5. | CKS-214 | Plug |
| | 6. | CKS-271 | Plug |
| | 7. | CKS-269 | Plug |
| ★ | 8. | CDF-590 | Connector |
| ★ | 9. | CXD-128 | Button Unit |
| ★ | 10. | CXD-126 | Button Unit |
| | 11. | CDF-586 | Connector |
| | 12. | CDF-586 | Holder |
| | 13. | CCL-124 | Feed through Capacitor |
| | 14. | CCL-124 | Holder |
| | 15. | CKS-270 | Plug |
| ★★ | 16. | BMZ30P040FMC | Screw |
| | 17. | CSG-207 | Switch |
| | 18. | CBL-211 | Spring |
| | 19. | BMZ26P030FMC | Screw |
| | 20. | CBL-211 | Holder |

| Mark | No. | Part No. | Description |
|------|-----|--------------|-------------------------|
| | 21. | CWB-151 | FM Front End |
| | 22. | CDF-660 | Connector |
| | 23. | CDF-660 | Insulator |
| | 24. | BMZ30P040FMC | Screw (KEH-9300SDK) |
| | 25. | CNF-387 | Clamper |
| | 26. | CDF-668 | Chassis Unit |
| | 27. | BMZ30P040FMC | Screw (KEH-9300, 9000) |
| | 28. | CDF-668 | Holder (KEH-9300, 9000) |
| | 29. | CDF-668 | Holder (KEH-9300SDK) |
| | 30. | CDF-668 | Connector |
| | 31. | CDF-591 | Connector (KEH-9300SDK) |
| | 32. | CDF-730 | Cord |
| | 33. | CDH-073 | Antenna Cable |
| | 34. | CDF-706 | Cord (KEH-9300) |

Fig. 19

• Tuner Amp Assy (2/2)

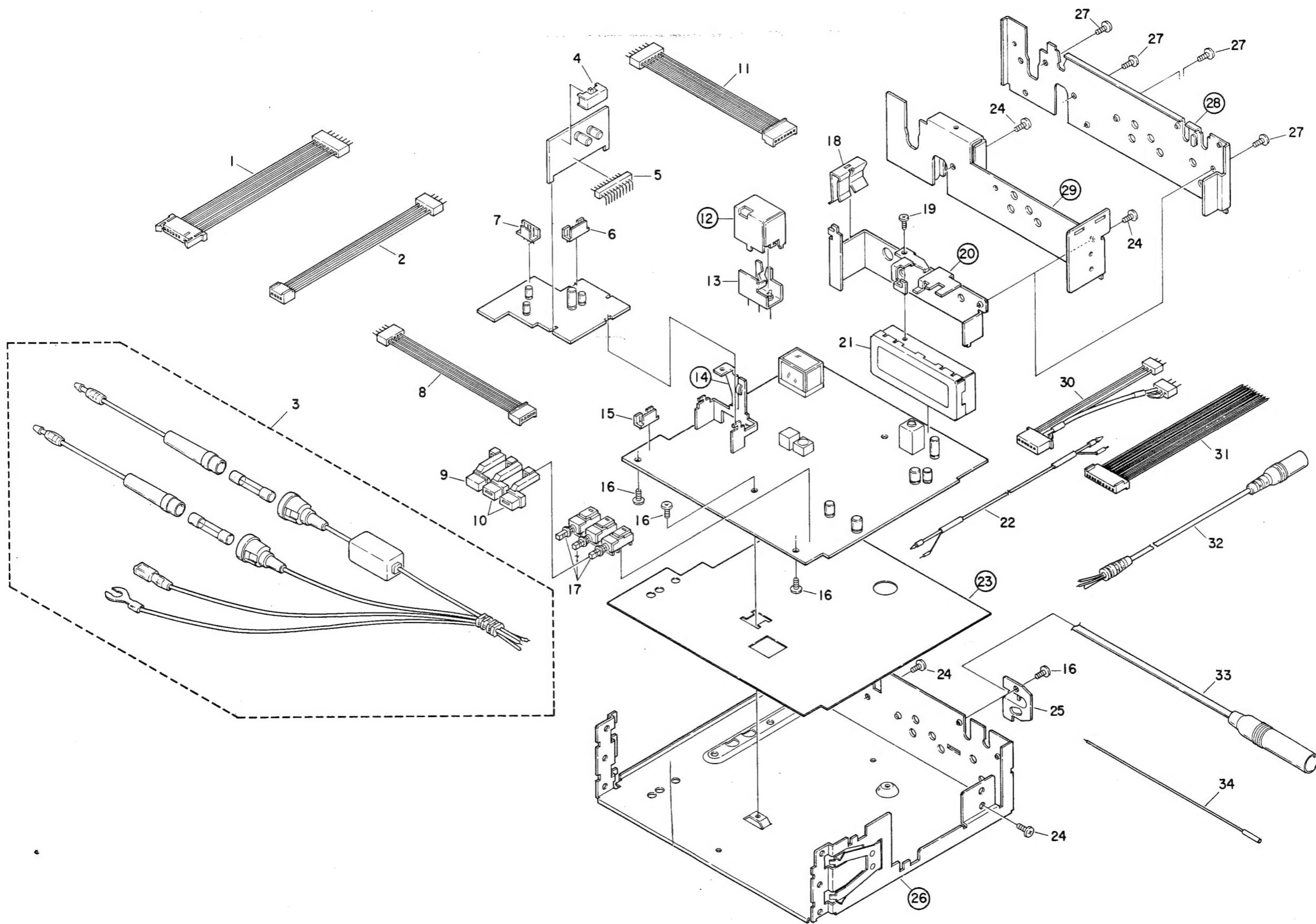


Fig. 20

14. PACKING METHOD

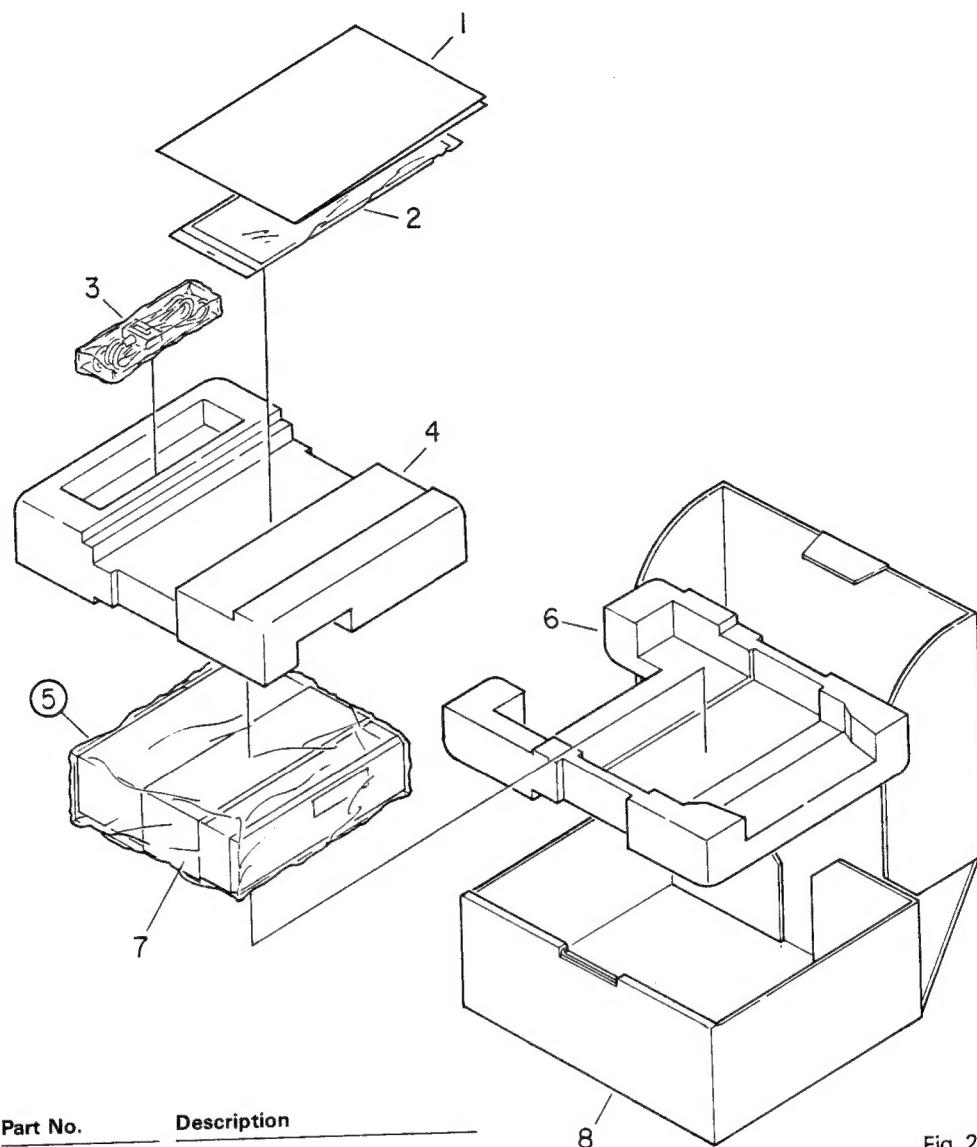


Fig. 21

• Parts List

| Mark | No. | Part No. | Description |
|--------|--------------|--------------------------|------------------------------|
| 1. | CRD-398 | | Owner's Manual (KEH-9300SDK) |
| | CRD-397 | | Owner's Manual (KEH-9300) |
| | CRD-396 | | Owner's Manual (KEH-9300) |
| | CRD-399 | | Owner's Manual (KEH-9000) |
| | | Card (KEH-9300SDK, 9300) | |
| | | Card (KEH-9300SDK) | |
| | | Card (KEH-9300SDK) | |
| 2. | CEA-885 | | Accessory Assy |
| 2-1. | CDE-437 | | Cord |
| 2-2. | CNF-111 | | Strap |
| 2-3. | CNF-382 | | Lever |
| 2-4. | CNW-642 | | Holder |
| 2-5. | | | Screw Kit |
| 2-5-1. | CBA-028 | | Screw for Strap |
| 2-5-2. | NF40FMC | | Nut |
| 2-5-3. | NF50FMC | | Nut |
| 2-5-4. | PMB50Y160FMC | | Screw |

| Mark | No. | Part No. | Description |
|--------|---------|----------|----------------------------|
| 2-5-5. | | WS40FMC | Washer |
| 3. | CEA-862 | | Remote Switch Assy |
| 3-1. | | | Remote Switch |
| 3-2. | CWM-684 | | Spacer |
| 4. | CHD-333 | | Styrofoam (KEH-9300SDK) |
| | CHD-131 | | Styrofoam (KEH-9300, 9000) |
| 5. | | | Cover |
| 6. | CHD-332 | | Styrofoam (KEH-9300SDK) |
| | CHD-130 | | Styrofoam (KEH-9300, 9000) |
| 7. | CNF-383 | | Holder |
| 8. | CHD-336 | | Carton (KEH-9300SDK) |
| | | CHD-334 | Carton (KEH-9300) |
| | | CHD-338 | Carton (KEH-9000) |